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Board of Natural Resources
Colstrip Hearings

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FRIDAY, FEBRUARY 13, 1976

The hearing reconvened at 8:35 A.M. on Friday, February 13, 1976, in the Chambers of the Montana House of Representatives, State Capitol, Helena, Montana.

The Honorable Carl M. Davis, Hearings Examiner, presided over the proceedings:

APPEARANCES:

Applicants:

William M. Bellingham, Esq.
John L. Peterson, Esq.
John Ross, Esq.

Department of Natural Resources and Conservation:

Arden E. Shenker, Esq.
Ted J. Doney, Esq.
Donald MacIntyre, Esq.

Northern Cheyenne Tribe, Inc.

Peter Michael Meloy, Esq.

The following proceedings were had:

HEARINGS EXAMINER: Are we ready, gentlemen?

MR. BELLINGHAM: Ready.

MR. SHENKER: The Department of Natural Resources is ready.

MR. MELOY: Ready.

NEIL H. WOODLEY, called as a witness by the Applicants, having been first duly sworn upon his oath, both as to his written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF MR. NEIL H. WOODLEY WAS DIRECTED TO BE INSERTED AT THIS POINT.)

STATEMENT OF TESTIMONY OF

NEIL H. WOODLEY

My name is Neil H. Woodley and my business address is 621 S.W. Alder Street, Portland, Oregon, 97205. I am employed by Portland General Electric Company as Chairman of its Generation Resources Investigation Team, a position I have held since July 17, 1972. Prior to that time, I was a Team member representing the engineering-planning discipline.

I presently hold Bachelor of Science and Master of Science degrees in electrical engineering which were granted at Iowa State University in 1961 and 1965 respectively. I am a registered professional engineer in the states of Pennsylvania and Oregon, a senior member of the Institute of Electrical and Electronics Engineers Power Engineering Society, and member of the Electric Club of Oregon and Geothermal Resources Council. I am an alumnus of the Edison Electric Institute Graduate Management Course.

My work experience consists mainly of electric utilty system planning beginning with Stanley Consultants, Inc. in 1961. During 1962 through 1964, I taught electronics at the U. S. Army Air Defense School, Fort Bliss, Texas, and courses in circuits and machines at Iowa State University. From 1965 through 1968, I was employed by Westinghouse Electric Corporation and worked in the Power Systems Planning Department in East Pittsburgh, Pennsylvania. I have authored over 30 technical papers and articles on electric utility system planning.

Since joining Portland General Electric Company in October, 1968, as Project Engineer in its Engineering Department, I have been directly involved in the site selection and preliminary engineering evaluations of every thermal generation project except Trojan. From its inception in 1973 to 1974, I served as Project Coordinator at Portland General Electric Company's Boardman, Oregon, coal-fired steam generating plant.

The Generation Resources Investigation Team (hereinafter referred to as GRIT) constantly conducts costs studies and analyses of various projects. Its reports are forwarded to management.

In 1971 GRIT prepared a study dated September 13 of that year which has been introduced into evidence as Applicants' Exhibit No. 214. At that time both W. A. Huddleston, who authored the study, and I were members of the GRIT team. The study concluded that the cost of transmitting electricity to the Portland General Electric service area from a generating plant at Colstrip would be considerably less than the cost of transporting coal from Colstrip to a generating plant at Boardman, Oregon.

In 1972 GRIT prepared a study showing, among other things, the cost comparison of purchasing and shipping coal by unit train from southwestern Wyoming to Boardman, Oregon, and the cost of generating and transmitting electricity from a mine-mouth, coal-fired steam generating plant at Colstrip, Montana. That comparison, previously introduced into evidence as DNR Exhibit No. 18, was prepared under my supervision, direction and control and shows, based upon our best estimates in 1972, that the annual projected cost for 1978, per kilowatt year, would be less for shipping coal from Wyoming than the cost of producing and transmitting electricity from Colstrip. The study did not take into account escalating rail costs versus the virtually constant transmission cost over the life of the plant, but rather reflected only the projected 1978 cost. Since the study, an increase in the rate of inflation and escalated cost of rail shipment, in part the result of the Arab oil embargo, show that the costs projected were very optimistic. A similar study today would show that costs of a mine-mouth generating plant at Colstrip and transmission to the Portland General Electric network would be substantially lower than the cost of purchasing and shipping coal to Boardman, Oregon.

At the time, in 1972, that PGE decided to participate in the Colstrip project, the company planned to build a nuclear plant at Boardman and needed generation facilities that would come on line before a nuclear plant could be constructed. A percentage ownership of Colstrip 3 and 4 satisfied that requirement. Since that decision, the company, while still pursuing the utilization of nuclear fuel, has been unable to date to resolve a siting restriction on building a nuclear plant at the Boardman site, and has shifted its next nuclear project to the Pebble Springs site. The delays associated with this change did result in our decision to proceed with a coal-fired plant at Boardman which was to have been completed subsequent to Colstrip Units 3 and 4 as they were previously scheduled. Both projects are needed. The propriety of the company's decision to participate in Colstrip 3 and 4 is reinforced by the subsequent increases in the cost of shipping coal versus the cost of transmitting electricity.

During January of 1976, GRIT prepared our most recent cost comparison study. It was prepared under my supervision, direction and control and was prepared for use at a hearing involving the Pebble Springs nuclear project. The results of the study show that, except for geothermal dry steam which unfortunately has not been found in Oregon, nuclear energy is the lowest cost. The next least costly is PGE's 20% participation in Colstrip 3 and 4, which is only 1.21 times as costly as nuclear. Next in order of costliness is the Boardman coal-fired generating plant which is 1.98 times as costly as nuclear. The present study does include our best estimate for costs over the life of the plant and shows that the cost of obtaining electricity by transmission from Colstrip 3 and 4 is considerably less than the cost of purchasing coal in northeastern Wyoming and shipping it by unit train to the coal-fired steam generating plant in Boardman, Oregon. In the study we used a coal unit train freight rate escalation figure of 6.4% per year because this figure appears reasonable based upon our experience.

The Boardman coal-fired generating plant presently scheduled to come on line in 1980 will use Gillette, Wyoming, coal to be purchased from Amax Coal Company. This coal contains a sulphur content of less than 1/2 of 1% and because of this low sulphur content, scrubbers will not be used to control the emissions from the plant. I would place the total estimated lead time for placing the Boardman plant on line as approximately nine years.

HEARINGS EXAMINER: Do you have any exhibits, Mr. Bellingham?

MR. BELLINGHAM: No, sir.

HEARINGS EXAMINER: You may cross-examine, Mr. Shenker.

EXAMINATION OF NEIL H. WOODLEY

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q Mr. Woodley, when did you get your assignment to come testify here, sir?

A Oh, a week or so ago.

Q In the hierarchy at the Portland General Electric Company, I assume you are some place under Glen E. Bredemeier, would that be right?

A No, that's not correct.

Q Are you above him?

A No, I am --

Q On another scale?

A On another scale.

Q Give us your position there, would you please, sir?

A My position is head of an interdisciplinary team made up of members of several different major disciplines and organizations within the company. I personally report to the Vice-President of Engineering and Construction. My entire team reports directly to the senior officer of the company, namely, our President, Mr. Frank Warren.

Q To whom do you personally report?

A As I stated, I report to the Vice-President of Engineering.

Q Does he have a name?

A Mr. Joseph Williams.

Q He would be on the same level in the hierarchy of Portland General Electric Company as Mr. Bredemeier would be?

A Not quite.

Q A little bit lower?

A He reports directly to the President, and Mr. Bredemeier reports to a Senior Vice-President.

Q You've written a number of papers, it says in your statement of testimony, Mr. Woodley, on the subject of electric utility system planning?

A That's correct.

Q Can you give us some idea of the range of material you have covered in the over thirty papers and articles on the subject of electric utility system planning?

A My experience has been broad in that I have worked from the distribution system, the electric distribution system, through the transmission and subtransmission systems, and then, most recently, within the past five years, I have been totally involved with the generation system, and the range of papers would cover that range of pursuit within the system itself, ranging from distribution system reliability up to -- I believe my most recent one was on the prequalification of nuclear plant sites.

Q Did you ever get into the subject of load management?

A Not directly, no.

Q How indirectly did you get into it?

A Only in that the shape of the load curve affects the generation resources that are selected to match it.

Q How?

A Well, as you know, Mr. Shenker, if you have a very short duration high peak, you look for a very low investment resource to meet that peak, to minimize the idle investment during the remainder of the year.

Q Such as a combustion turbine?

A Precisely.

Q Did you want to give me other examples? Your voice sounded as if it were in the middle, rather than at the end of a sentence.

A I can continue down the load duration curve;as you move into the intermediate range, you then can justify higher expenditures because the utilization will be greater, and as you move into the continuous operation range, which we call base load, then, of course, the goal is to reduce to a minimum the incremental cost while being able to justify higher fixed costs.

Q That would have the maximum capital investment, would it not?

A The maximum capital investment would be justified.

Q And these base load facilities would be justified, although they would be the highest capital investment, because of the projected complete utilization, right?

A Absolutely.

Q Sure. Therefore, if you guessed wrong and you added the most expensive facilities you could find, what you would do would be to pad a rate base without using the facilities?

A It's not exactly a guess. What we're looking for are those equipments that can produce electric energy at the lowest possible incremental cost and there are very limited, few resources that match that criteria, and it is not a guess.

Q Gee, I didn't mean to offend you, Mr. Woodley, about using the word "guess."

A I just wanted to correct that.

Q You can use any word you want.

A All right, plan.

Q That's very good. Your plans have been wrong sometimes, haven't they, in that sense?

A Planning is a dynamic process.

Q That means that you can be wrong sometimes, doesn't it?

A That means it changes.

Q Can they be wrong?

A Not really.

Q Oh, they're infallible?

A The plan changes as circumstances change. People frequently make the error of looking at the plan that you made yesterday when the situation is changed today, and they say, your plan was wrong. My response is no, under the assumptions that were made at that time, with the best available information, that plan was correct. Today we have better information; the plan will be different, not necessarily inferring that the other one was wrong.

Q Assumptions are wrong, is that your view?

A Not wrong. The assumptions change as additional information becomes available.

Q What's the matter with the word, wrong? Does that bother you?

A Of course. No one likes to be wrong.

Q Okay, we won't use that word, then. In your statement of testimony, Mr. Woodley, you referred to an update of the GRIT Study; as a matter of fact, there have been seven different comparisons in the GRIT Study to show which way PGE should or could go, isn't that right?

A That's approximately correct.

Q That's exactly correct, isn't it? They were in April of 1972, August of 1973, November of 1973, March of 1974, August of 1974, September of 1975, and January of 1976, seven in all, correct?

A That is correct.

Q Can you tell me, Mr. Woodley, why, in 1975 and 1976, during your Nuclear Regulatory Hearings on the Pebble Springs facility, you relied upon your April 1972 study rather than any later study as the documentation which you furnished to the Nuclear Regulatory Commission?

A I'm sure, Mr. Shenker, that you're aware that sometimes these proceedings drag out far beyond what we anticipate and what we hope for, and the study that you are referring to is the one that was submitted with the Pebble Springs environmental report, which was submitted to the NRC in 1973, late '73. The documentation for that report was prepared substantially in advance of that because, as you know, these are very big undertakings. Now, in fact, the January '76 study that you're looking at, in the far righthand column, was, indeed, done for the Pebble Springs Atomic Safety and Licensing Board Hearing before which I testified in Portland in January. That study was anticipated to be submitted in evidence at that hearing, but was subsequently not needed.

Q Why not?

A Because the case was made without a real need for getting into the details of other alternative costs.

Q The fact of the matter is, Mr. Woodley, isn't it, that as of this very moment, on February 13, 1976, Friday the 13th or no, the Nuclear Regulatory Commission looking at your application for Pebble Springs, still doesn't know what you found in January of 1976?

A The Nuclear Regulatory Commission is looking at the final environmental statement prepared by the NRC staff, which contains updates on their own bases for calculation, which we have agreed to in that proceeding.

Q It's obvious you like your questions better than mine, Mr. Woodley. Why don't you try answering mine? Do you remember what my question was?

A I believe I did answer your question.

Q What do you think it was?

A Well, why don't you restate it?

Q I think that might be a little safer than you're telling us about the question that you didn't remember. Mr. Woodley, the question is whether the Nuclear Regulatory Commission has before it now your January 1976 GRID Study?

A Of course not, if it wasn't submitted in evidence.

Q That's the answer to the question put. Thank you. Now, let me see that this record is not silent on the subject of your studies. It is true, is it not, that of the seven occasions in which your GRID Studies were performed, on five of those occasions -- excuse me -- on four of those occasions, there was no comparison made of Colstrip at all?

A That is correct.

Q Between April of 1972 and September of 1975, although you had four intervening studies, on none of the intervening occasions did you compare Colstrip with any of the alternatives you are projecting, isn't that correct?

A What I used, of course, were the results from the 1972 study, but basically, yes, what you're saying is correct.

Q When you studied Colstrip again as a comparison with nuclear facilities and geothermal facilities and with combustion cycle gas turbines and combined cycles, in September of 1975, and in January of 1976, it is correct, is it not, Mr. Woodley, that you found geothermal dry steam generation of power, for example, from the geysers, and all nuclear alternatives, to be cheaper than the Colstrip alternative?

A And every other alternative. That is correct.

Q You don't have any reason to doubt those studies, do you, sir?

A Not at all. Our company has repeatedly stated that the nuclear alternative is the best alternative for us in the Northwest, and we are pursuing that alternative with all diligence, and certainly, geothermal dry steam is a very desirable resource, one which we hope will be found in the state of Oregon, but to date none of that resource has been discovered or developed.

Q How are you doing in Idaho?

A We're not participating directly, if you're referring to the

Raft River project.

Q No, I'm not, I'm referring to the state of Idaho, where one understands there are some explorations going on with geothermal. Are you participating in those explorations?

A That's what the Raft River project is.

Q That's one of them.

A And no, we are not participating directly. We are reviewing all the materials that have been forthcoming from that, but that, of course, is strictly, at this point, a research activity.

Q Now, Mr. Woodley, just so we are also clear on your function as the second witness in these proceedings from Portland General Electric Company, you have not come here today to criticize or disagree with the statements offered in evidence by Glen Bredemeier, have you?

A Not at all.

Q In your statement of testimony, Mr. Woodley, I believe you tell us that you had some responsibility on the Boardman project for PGE, isn't that correct?

A That's correct.

Q Do you know of any invitations, negotiations, or suggestions to the Montana Power Company to become involved as one of the co-sponsors of the Boardman project?

A Not to my knowledge. I don't think they would want to be.

Q How are you coming with your studies on the application of solar power in the PGE service area?

A We're seeing some very interesting results and we have a lot of public interest in that.

Q And you have a 1.3 million dollar research budget on that subject, don't you?

A No, not just on solar.

Q You include solar within the 1.3 million dollar research project?

A Correct.

Q You also have a test program going on the feasibility of performance of different solar systems in the general service area climate that you have?

A Correct.

Q You have some experiments going on now with solar resisting heat pumps and solar resisting electric boilers, do you not?

A Yes. We have a third one, which uses rock storage with heated air as the heat transport medium.

Q As of right now, Mr. Woodley, the solar energy resource can assist heating requirements and in some years, you expect, that solar energy can be a viable central generation resource, as well, isn't that right?

A I would hope so, yes.

Q I have a very accurate source of information on the subject, because I'm a customer of PGE and I get your Service Line News with my bill each month. I've been waiting to receive something else in the envelope each month, but it hasn't --

A Well, we don't send our dividend checks out in the same envelope.

Q Ah, alas, I'm not a stockholder.

MR. BELLINGHAM: You probably will be waiting in vain, then, Mr. Shenker.

MR. SHENKER: Good, because if you knew what I was waiting for, I shouldn't receive it.

Q Now, Mr. Woodley, are you privy to the announcement which the Wyoming Siting Council said would occur today by the Pacific Power and Light Company of a Decker station in Wyoming, a coal-fired generating station of anywhere from 500 to 1500 megawatts?

A No, I'm not aware of that submittal. It wouldn't surprise me.

Q You knew that PP&L was considering that?

A I know that PP&L was considering utilization and expansion of the vast Decker coal reserve, and certainly, mine-mouth generation would be one of the alternatives you would want to look at.

Q They rejected that alternative. The Decker station is where?

A There is no Decker station.

Q Where is the Decker mine?

A The Decker mine is north of Sheridan, Wyoming, just over the -- just in Montana.

Q And they have some five to six million tons available per year right now, don't they?

A That may be. I'm not sure of the number.. It's a very large mine, and will be larger.

MR. SHENKER: Is our next exhibit No. 28, Mr. Davis?

MR. BELLINGHAM: I already have it marked as Applicants' Exhibit No. 231.

HEARINGS EXAMINER: 28 would be right.

MR. SHENKER: Thank you.

Q I'm handing you what has been marked for identification as

DNR Exhibit No. 28, Mr. Woodley. Have you seen the full text of that agreement previously?

A No, I have not.

Q Would you like to take just a few minutes -- it's not a very long agreement -- to scan through it and become familiar with what it covers?

(PAUSE WHILE WITNESS COMPLIES.)

Q You are familiar, of course, with the facts which are expressed in this agreement in a form, perhaps, which you hadn't seen before, right?

A That's correct.

Q You knew that on January 23, 1976, Puget Sound Power and Light Company, Washington Water Power Company, the Portland General Electric Company, the Pacific Power and Light Company, had agreed to take a look at how they would manage the program for obtaining resources, either at Skagit project or the Pebble Springs project?

A That's correct.

Q And as of that letter of January 23, 1976, as Exhibit 28 expresses, the Skagit project and Pebble Springs project are to be allocated as shown in attachment A to Exhibit 28, isn't that correct?

A Correct.

Q And the projected dates for those projects as of January 23, 1976, are as indicated in attachment B to that exhibit, correct?

A Yes.

Q As far as you can tell, Mr. Woodley, this is a true and correct copy, is it not, of the agreement between the parties?

A I have no reason to doubt it.

MR. SHENKER: We'll offer Exhibit No. 28.

HEARINGS EXAMINER: Could you tell me what it is, to put in my notes here?

MR. SHENKER: An agreement of January 23, 1976, among the four non-Montana parties applicant.

HEARINGS EXAMINER: January, 1976?

MR. SHENKER: Yes, sir.

Q Mr. Woodley, it's a fair reading, is it not, sir, of the intention of the parties, as you understand it, that Puget is to remain the sponsor and proponent, as it were, of the Skagit project, and Portland General Electric is to remain the sponsor and the proponent, as it were, of the Pebble Springs project?

A Correct.

Q And that each of them will go forward with due diligence to try to obtain certification or licensing for their proposed facilities, right?

A Yes.

Q It is also a fair reading of the intention of the parties, is it not, Mr. Woodley, that the first project certified, will indeed meet the needs of the parties to this agreement, and therefore, the other party having a sponsorship responsibility on the other project, should, indeed, abandon the project altogether, isn't that true?

A No, that is not true at all.

Q You think they have that option?

A Those projects are needed and the only thing that is in question right now is which project will be the first. All four units will be built to meet the needs as currently projected.

Q Well, as a matter of fact, this agreement specifically provides, does it not, Mr. Woodley, for the option of termination of either of the projects?

A I have not read that in the agreement, and I do not know of any such condition. I do know that the intent of both companies and all parties involved is to pursue the construction, the certification, and licensing of all four units, and it is presently projected that all four units will be required. There is not, as you are implying, a redundant certification nor a redundant process underway. We simply could not afford such a luxury.

Q Well, maybe the rate payers couldn't afford to have excess capacity, but on page 6 of your agreement, you seem to reflect that possibility, paragraph 7, at the top of the page.

A Mr. Shenker, the intent is --

Q May I finish my question, sir?

A I object. I'm not going to get involved in that condition of this certificate. I did not have any part in drafting this certificate, and as I have stated, I know the intent of both parties is to build both projects, and any intimation that there is excess capacity in this plan, that is not needed, because of some condition in this certificate, or the agreement, that you've offered as evidence, is beyond my knowledge.

Q You just demonstrated that you did mind waiting for my question, but now I'll put my question to you. Would you care to comment, Mr. Woodley, on the language that appears on page 6, paragraph 7, of Exhibit No. 28 of the DNR, which states: "The ownership agreement (referring to the project stated and described in Exhibit No. 28) will further establish procedures whereby Puget will have the right to cancel Skagit project unit No. 2 and Portland General the right to cancel Pebble Springs project No. 2."

A That's what it says.

Q My question was whether you care to comment on that?

A I just did.

Q You have no further comment to make?

A No further comment.

Q Who are the others that appear on attachment A to Exhibit No. 28, for the Pebble Springs project?

A At the present time, it is anticipated -- well, suffice it to say that they're unidentified.

Q Yes. Now, Mr. Woodley, the Pebble Springs project has a capacity of some approximate 1288 megawatts for each unit?

A 1260, I believe.

Q So we have 15% of 1260 megawatts, or something close to 200 megawatts for each of the two Pebble Springs projects, which are currently unallocated, is that correct?

A By agreement, yes.

Q I don't suppose, Mr. Woodley, you've taken a look at the exhibits that have been offered by Portland General Electric Company in this proceeding, on its load and resource analysis and allocation, to see whether this January 23, 1976 agreement affects the allocation of resources that appear on those exhibits? Would I be correct in my supposition?

A You'd be correct.

Q Now, Mr. Woodley, on the last page of your statement of testimony prepared for this proceeding, you refer to the Boardman coal-fired generating plant as obtaining coal with a sulfur content of less than one-half of 1%, and therefore, you intend not to use scrubbers at all to control emissions from the plant. You don't mean to say you will have no pollution controls at all, do you?

A No, of course not.

Q You will have electrostatic precipitators installed for particulate matter control, will you not?

A That's correct, and of course, you do achieve some SO_2 removal with the ash.

Q Have you obtained a permit from the Department of Environmental Quality with respect to the pollution control systems which you intend to place in your facilities?

A The Department of Environmental Quality is a party or a part of the agreement that we have with the state, signed by the Governor, saying that the company has approval to build the plant as it is presently designed. The final design of the pollution control devices, as with all devices within the plant under the jurisdiction of other agencies, will be reviewed by those agencies and approved.

Q So the eventual pollution control systems, which may or may not be necessary to satisfy Oregon's environmental standards, are still to be submitted for approval?

A For approval, but of course, the technology that is going to be incorporated is established technology, and the performance of that equipment is quite well-known, and we, as are the Department of Environmental Quality, are confident that the performance that we expect will be achieved.

Q I take it the answer to my question is yes, that the specific equipment and the proposals that you will make for pollution control systems are still to be submitted for approval?

A The final design of those, yes.

Q In your statement, sir, you comment on the status of Boardman at the moment. What is its construction status?

A The contractor has been on site for approximately one week.

Q Counting from now forward, how long do you think it will take before you can go to commercial operation?

A The plant is anticipated to be in commercial service in July of 1980.

Q In the course of your GRIT studies, Mr. Woodley, to which you refer in your statement of direct testimony, have you taken a look at the capacity of industry within your service area to self-generate?

A I have not personally made a methodical investigation of every industrial boiler that might be able to include a topping turbine on it, if that's what you're referring to.

Q Yes, that is what I'm referring to.

A We have gone through several such proposals with certain major customers, and invariably, the conclusion is that it is far too costly for them to undertake such a project when you compare the economies of central station generation.

Q Well, on that subject of the comparative economies, efficiencies, and utilization of what I call self-generation, but you've more correctly described as the topping of a boiler on their industrial steam capacity, are you familiar with the study done by the Dow Chemical Company prepared for the National Science Foundation in June of 1975?

A I'm not intimately familiar with that. Dow is not one of our customers, and they're not in our service area, but I know they've done a lot of work on improving their own utilization efficiency, which is something that we are working with very diligently with every one of our major customers, to improve their use, or wise and efficient use of a valuable commodity.

Q I may have misled you. I didn't mean to imply that the Dow Chemical Company, which has a chemical plant in the Pacific Northwest -- has more than one -- has done the study for itself. I was referring to the study done by the Dow Chemical Company, by the Environmental Research Institute of Michigan, Townsend, Greenspan and Company in New York, with the assistance of the attorney firm in New York,Cravath,Swaine & Moore, done for the National Science Foundation, Office of Energy Research and Development Policy, and published in June of 1975, and for identification purposes, I have labeled it DNR Exhibit No. 29, and I'm going to hand it to you and ask if you're familiar with the publication?

A I have not read the publication, I can tell you that now.

Q Have you seen it before?

A No, I have not. Interestingly enough, industries are interested in buying coal from us to replace the fuel resources that are dwindling that they are presently using in their boilers, and I think that they are more frightened by the potential fuel unavailability than are we, and they're not too eager to have to worry about supplying their electrical needs as well as their processed steam needs. One customer is thinking of burning garbage, and we're following that quite closely, and I wish him well.

Q Do you know what the pulp and paper generating potential is in megawatts in the state of Idaho?

A In the state of Idaho, no. I have no idea.

Q Does the figure, 30 megawatts, sound high to you?

A That's just the topping turbine potential capability?

Q Yes, as you've described it.

A Combining all small industrial users?

Q They would have to be those industrial users which have enough capacity surplus to justify having that kind of proposal, and I believe it's only in the Nez Perce County in Idaho, where they have such industrial users.

A I'd really rather not comment on it, as to whether that's a correct number or not. I really don't know.

Q In the state of Montana, do you know what the generating potential is of the pulp and paper industry, alone?

A No, you've got me again.

Q 35 megawatts -- is that a high figure for you?

A Again, I won't comment on it.

Q Well, let's get to Oregon, it's a little closer to home for you. In the state of Oregon, do you know what the generating potential in megawatts is in the pulp and paper industry, alone?

A I'm only most familiar with those that are in our service area, and I imagine that there are substantial capacities that if I were to give you a number, I would probably be omitting, because --

Q Is Columbia County in your service area?

A No, it is not, only a small portion of it.

Q And Linn County, Lane County, and Lincoln County are not in your service area, are they?

A No.

Q Well, I believe that it's really confined to those four counties, Columbia, Linn, Lane and Lincoln, where you have any significant generating potential. In those counties, respectively,the megawatt generating potential is 20 megawatts in all but Lincoln and 30 megawatts in Lincoln. Do those figures sound high to you?

A I have no basis for evaluating those.

Q How about in the state of Washington, do you know anything about the generating potential within the pulp and paper industry there?

A No.

Q Some nine different counties in the state of Washington have significant pulp and paper industries and a generating potential of the following for each of the respective counties, and I'll ask you whether you believe those figures are high or reasonable.

A I have no basis for judging, so I won't comment on them.

Q Let me ask if you have heard the following figures: 25 megawatts generating potential in Wahkiakum County -- that's the

Bellingham area, 60 megawatts in Clark County -- that's across the river from Portland, 40 megawatts in Grays Harbor, 70 megawatts in Snohomish County -- north of Seattle -- 120 megawatts in Cowlitz County, 20 megawatts in Clallam County, 20 megawatts in Jefferson County, and 40 megawatts in Pierce County, 20 megawatts in Walla Walla County. Can you tell me whether you've heard those figures before?

A No. Of course, I might add that the numbers you are referring to are potential, only, and there's no representation of the practicality or the cost or the availability, or how those units would be operated. It certainly would not be available energy to any other customer, because the operation of the plant, and indeed, the boiler, is under the control of the pulp and paper industry, and we in the electric utility industry, are faced with obligations to customers beyond the pulp and paper industry, and we would certainly have to provide a backup source for every one of those sources that you have mentioned and in all cases, that shoots the economics of it. Those small boilers are not fitted with pollution control equipment that we are fitting our central stations with, so you lose from not only the economic grounds, the availability grounds, the reliability grounds, the dispatch control grounds, but also, on the pollution control, so those resources, while they may sound impressive when you add them all up, really represent very much a hypothetical pie in the sky resource.

Q That wouldn't still be your opinion, would it, Mr. Woodley, if you were familiar with the conclusions done in the study which I had marked and showed to you as DNR Exhibit No. 29?

A I've already stated that I have not read the study. I'm not familiar with the study, and I have no basis for evaluating the accuracy of those numbers. I'm only familiar with the general concept of utilizing industrial boilers to provide energy to meet electric utility requirements. That's part of my responsibility and I consider myself to be knowledgeable in that area.

Q Have you read any studies similar to the Dow study prepared for the National Science Foundation?

A No.

Q Have you investigated the potential of the utilization of this generating capacity for distribution to users other than the companies which generate the actual power?

A Yes. In our service area, I have looked at that potential, as I alluded to earlier, in conjunction with inquiries by those people to secure fuel from us that do not have fuel to meet their projected requirements.

Q Can you tell me, Mr. Woodley, what would it take in order to distribute power from a generating source in one industry or one company, to a user in some other location?

A Energy can be transmitted by several forms. In some cases, energy is useful to industry as processed steam, and it can be transmitted by a pipeline. In other cases, it can be useful in electric form and can be transmitted by wire, as you are very familiar. In other cases, the fuel itself can be transmitted.

Q What would be the lead time for converting the top boiler capacity, as you put it, or the additional generating capacity for an individual industrial company now, sir?

A In Oregon, if it is over 25,000 kilowatts, it will go under the Energy Facility Siting Council Act, which will mean that a notice of intent will have to be filed once all of the parties are in agreement, and then there will be a one year period, during which the notice of intent will be made public for all people who might have a position to step forward to be counted, and then, in one year, an application would be submitted detailing the elements of the proposal, and the Council will have two years in which to act, so there is a three year period, which history has shown the Council will take the entire three years before you know whether you have authorization to go ahead, or whether you're going to have authorization not to go ahead.

Q That's for 25 megawatts or more?

A That's correct.

Q For under 25 megawatts, what would be the lead time?

A Under 25 megawatts, presumably, it would involve, first of all, engineering studies as to the feasibility of it; then it would involve agreements with all parties involved; then it would involve design, and I would estimate probably two years to the start of construction once you'd gone over all of those hurdles. Then, it's very difficult to say what the construction time would be, because when you're involved with an existing paper and pulp industry plant, for example, you get into very complicated problems, where you want to keep that plant on line producing paper while you're doing a rather major overhaul of their power supply, so that stretches out greatly the time over what you expect for building a new plant from the ground up, where you don't have to worry about those complications, and I'm sure that a project of the magnitude that we're talking, to install a turbine generator and all of the associated electrical and piping and foundation ancillary equipment, would certainly take three years.

Q How about in the petroleum industry? They have the capacity for generating potential within their industrial processes, too, don't they?

A That's correct.

Q And in the state of Washington, in Anacortes, some 60 megawatts of generating potential -- what would that sound like to you?

A I would have no basis on which to judge that.

Q What would their lead time be?

A Similar. In the case of the petroleum industry, in most cases, they're very careful; as the Dow study points out, they're very much interested in utilizing all of the energy that's available to them, especially in the refinery process, where you're looking at how many Btu's are coming in with the crude, and how many Btu's, and indeed, the value of the product, that you're able to push out the front door for sale, and anything you can do to recover or utilize energies in the intermediate stage, is pretty well along in exploitation, so I'd be very surprised if there was any significant excess potential that really could be developed, practically.

Q How about in the chemical industry itself?

A Same. I'm lumping the chemical industry in with the oil.

It's oil refining and chemicals.

Q In Butte County, Idaho, a 40-megawatt generating potential? You'd have no basis for commenting on that, I assume?

A That's correct.

Q In Benton County, Washington, a 40-megawatt potential, both of these being in the inorganic chemical industry? You'd have no basis for commenting on that, either?

A Other than the comment I've already made about the inaccessability of this resource for other users.

Q Would you have any useful comment for us, Mr. Woodley, on the conclusion of the Dow study, Exhibit No. 28, that industrial steam usage in the pulp and paper and petroleum and chemical industries alone, combining those three, is capable of economically generating over 10,000 megawatts of electrical power?

A I have a comment. You'll have to be the judge as to whether it's useful to you or not.

Q Well, the question is, whether it's useful to you to make the comment, and the Board will determine whether it's useful to it.

A May I see that exhibit?

Q Sure. I was reading the first line in the fourth paragraph.

A If I were to make a study of that to verify whether or not in fact, 10,000 megawatts of power is available, I would go into the aspects of fuel availability, generating source availability, reliability, dispatch control, energy costs, and environmental impact and allowable impact for those units, in the case of Oregon, that would be over 25 megawatts, and of course, I might add, the last action of the legislature was to reduce what was previously 200 megawatts to 25 megawatts. I would not care to venture to guess what the next legislative session might come up with, so in fact, there are a lot of other factors that impact the utilization of industrial steam, that are out of and beyond the control of the electric utility industry, which I represent.

Q Do you have any comment on the next paragraph, the first sentence of which says, "Industrial power generation (inaudible) -- per megawatt generated over power plants because of the higher efficiency." What comment could you make on that?

A The comment I would like to make on that is what I've already stated, that these industrial users are looking to us for coal to burn in their plants because they don't have anything else to burn, where they're now burning oil, and in no way would I be able to agree with the fact that industry is going to be able to result in a cleaner effluent from electric power generation than the electric utility industry itself, because we are the target for the environmental movement. I think you're fully well aware of that, so we catch the brunt of all of this. The industry catches its share, but it's a far smaller percentage, and consequently, the dollars being spent on the cleanup of air and cleanup of water for the electric utility industry are orders of magnitude greater than the plants that would have to be retrofit to utilize this hypothetical resource.

Q Do you feel kind of paranoid about being the target of the environmental movement?

A I sleep quite well at night, actually, Mr. Shenker, because the problem rests with all of us. We're all in this together. I like a warm house, I like warm food on my table, and I like all of the things that are associated with electric energy that are available to me, and so I figure that if I'm cold, you're going to be cold right along with me, and you're going to point at me and say, "You didn't do your planning, and you did a lousy job," and I'm going to point at you and say, "If you guys had left us alone, we wouldn't be in the mess we're in today, and we'll allow somebody on a higher level than we to resolve who is right."

Q Mr. Woodley, wouldn't you agree with me, sir, that both of us would want to have energy available for delivery at the highest possible efficiency?

A No, I would say at the lowest possible cost, because the highest possible efficiency might be something that -- using an extreme example -- we could take the solar panels off of some of our space satellites and produce energy -- now, efficiency, of course, is misleading. The efficiency would be very low, but we could produce it from solar power, but we would be paying about $50,000 a kilowatt for that, and I don't think either you or I would like to see that on our bill. You would probably not even get to reading the service lines if you saw that number on your bill.

Q Assuming equal costs, wouldn't you then be interested in the higher efficiency?

A No. I would be interested in the higher efficiency only if it produced a lower cost, not an equal cost.

Q So you're looking at the potential of equal efficiency and comparing lower costs?

A I'm going to look for a lowest cost, because I believe that the economic system does properly reflect efficiencies. I believe that the incentive to increase efficiency is going to exist if savings can be shown in the fuel resource or the raw resource that's being utilized more efficiently. If it cannot be justified economically, then there is no other responsible ground at the present time under which an enterprise could move in that direction.

Q Even in an energy crisis, you don't believe that efficiency should be pursued? You believe it's cost that should be pursued?

A This is the constraint situation that goes beyond economics. This is what I was just referring to, that in the presence of some artificial constraint, where the economic system breaks down, as in the case of regulated well prices on natural gas, the utilities were led down the primrose path by the government for regulated natural gas prices. They were artificially low, and we committed vast resources to using that to generate electric energy. That is a perturbation to the economic system. The Arab oil embargo was a perturbation to the economic system. The old oil-new oil legislation -- regulations -- are a perturbation to the economic system. When those things occur and those outside forces impact the economic decision, then, the concept of lowest cost gets distorted, and in that case, things like efficiency of utilization may overrule, yes.

Q Okay, thank you very much, Mr. Woodley.

MR. BELLINGHAM: May I have five minutes?

HEARINGS EXAMINER: We will take a brief recess.

(BRIEF RECESS.)

HEARINGS EXAMINER: You may proceed with the redirect.

CONTINUATION OF EXAMINATION OF NEIL H. WOODLEY

Redirect, by Applicants

By Mr. Bellingham:

Q Now, then, Mr. Shenker, upon his cross, interrogated you relative to a historical comparison of generation resource relative costs; do you recall that?

A Certainly.

Q And he indicated that there were some seven studies involved in that comparison, is that right?

A That's correct.

Q And your answer was that there were seven?

A Yes.

Q I now hand you what has been marked as Applicant's Exhibit No. 231.

HEARINGS EXAMINER: Is this a new exhibit?

MR. BELLINGHAM: Yes, sir.

HEARINGS EXAMINER: Then it would be 232.

MR. BELLINGHAM: Did 231 go into evidence?

HEARINGS EXAMINER: It went in yesterday, yes.

Q I hand you what has been marked as Applicants' Exhibit No. 232 and ask you what that purports to be?

A It purports to be a historic comparison of generation resources relative costs, the source of which are studies that I either performed myself or that were performed directly under my supervision.

Q Calling your attention to Applicants' Exhibit No. 232, this is the particular study that you were referring to in answer to Mr. Shenker's questions, is it not?

A That is correct.

Q And who prepared this particular study?

A I did.

Q Personally?

A Personally.

Q In the usual and ordinary course of business?

A That's correct.

MR. BELLINGHAM: We now offer into evidence Applicants' Exhibit No. 232.

HEARINGS EXAMINER: Do you wish to voir dire on it, Mr. Shenker, or have you had a chance to look at it?

MR. BELLINGHAM: This particular exhibit was turned over to Mr. Sheridan some days ago, how long, I do not know.

MR. SHENKER: In Portland?

MR. BELLINGHAM: In Portland, and I am sure Mr. Shenker has all the figures in his path that appear on that.

MR. SHENKER: They weren't given to me in this form. That's my problem. I'm trying to compare the figures that Bill read to me over the phone from what is here on the exhibit now.

(PAUSE.)

MR. SHENKER: I had better voir dire, because all the figures that appear on Exhibit 232 are different from the figures that were read to me over the telephone by Mr. Sheridan.

HEARINGS EXAMINER: You may voir dire.

Voir Dire by Department of Natural Resources and Conservation

By Mr. Shenker:

Q When was this prepared, Mr. Woodley?

A It was prepared in January of this year. It was prepared at the same time that the study was done that appears in the far righthand column.

Q Does there exist more than one copy of the same thing? Has it gone through revised editions?

A No, there's only the one historic comparison that we're discussing here today. That's the only one. Would you read off the numbers that you have, and maybe I can identify them?

Q Take the last column, for example, 1976, the most recent study. The figures that I have show 1.21 for Colstrip and you have 1.17 for Colstrip.

HEARINGS EXAMINER: That looks like a different exhibit than I have.

MR. SHENKER: You gave me the wrong one, Bill.

MR. BELLINGHAM: I certainly did.

A Let me point out the difference between the two. It's the same study. The only thing is that one study was done for comparison purposes at 60% capacity factor on all units, and the other one was done at 80, and that's why I wanted to make sure that we did have the same one, and the one you were questioning me on earlier, those numbers came from the one I am using, the one at 80%.

Q I see, yes. The difference between them is marked at the top. One of them says .60 PF, which is your capacity factor?

A Yes. We can discuss either one of them. The results are the same. I mean, they come from the same study.

MR. BELLINGHAM: So the record is correct, I handed Mr. Shenker this morning a study that used a plant factor of 60% rather than 80%, and the 80% plant factor is the one that has been utilized as far as Applicants' Exhibit No. 232 is concerned.

MR. SHENKER: Okay, I'll compare those figures. Would you like the 60% plant factor to be 232-A, or would you like me to make it Exhibit 29-A for the Department?

MR. BELLINGHAM: 232-A is fine.

MR. SHENKER: Now that we have all the information together, I have no objection to Exhibits 232 and 232-A.

HEARINGS EXAMINER: Very well, Exhibits 232-A and 232 are admitted, and while we're on the subject, DNR Exhibit No. 28 is also admitted, to make the record clear.

Redirect, by Applicants

By Mr. Bellingham (continuing):

Q Now, then, calling your attention once again to what I hope is the correct exhibit, Applicants' Exhibit 232, utilizing an 80% plant factor, this is the basic study, I assume?

A That's correct.

Q Will you tell us what you mean at the top when you say: "Source, GRIT Studies, 1972, to Present"?

A As I stated in response to one of Mr. Shenker's questions, planning is a dynamic and continuing process, and that's the game that I'm involved in, and our studies started on the relative comparison of resources with the publication of this first study in April of '72 and have continued throughout to the present, and the purposes that these studies are performed, vary from time to time, depending upon the resource question that we are trying to answer. Earlier it was observed in this exhibit that there is no entry for Colstrip in the August '73, November '73, March '74 or August '74 studies. The reason for that supports the point that I just made, that at that time, Portland General Electric Company was deeply concerned about some decisions that had to be made regarding intermediate range resources, and intermediate range resources are those resources that come between the high peaking application and the base load application. The decision we were working on at that time involved combined cycle additions versus other -- the other resources that might have to be pressed into service for intermediate or extended hours of operation. Colstrip was not a part of that deliberation.

Q Now, then, the third line from the top, the heading, you have "Eastern Oregon Nuclear at .80 PF = 1.0." What does that mean?

A That means that I have taken the delivered energy cost from the Eastern Oregon Nuclear Resource, delivered to the PGE service area, and I have assumed that that cost is 1, and then I have divided that cost into the costs of delivered energy from the other resources, simply to get a comparison as to how much greater, or how much less expensive, the delivered energy cost will be. It's called normalizing the data.

Q Now, then, the first study that appears on that exhibit is a study of April 1972, is that correct?

A Correct.

Q I would like to call your attention to a previous study that appears in evidence here, Applicants' Exhibit No. 214, which is a study dated September 13, 1971, a GRIT Study from W. A. Huddleston. The subject is coal transportation. Are you familiar with that particular study?

A Yes, I am.

Q Now, does that particular study appear upon either Applicants' Exhibits 232 or 232-A?

A No, it does not, and the reason that it does not is that the September of '71 study is, as the title on exhibit showed, a transportation study, and it is not a relative resource comparisons study.

Q That is the reason it does not appear?

A That is the reason, that's correct. There are no plant costs, site development costs, revenue requirements, and all of the other things that go into making up a resource comparison cost included in the 1971 study.

Q Now, then, are you familiar with a study dated back in April of 1972, which appears in this proceeding as DNR Exhibit No.

18?

A Yes, I am.

Q And that is the particular study that appears in the first column in Applicants' Exhibit 232 and 232-A?

A That is correct.

Q Calling your attention to DNR Exhibit No. 18, the study dated April 1972, I would like to ask you, at that time were you connected with the GRIT Study?

A Yes.

Q And at that time, were the coal generating units that you might possibly be interested in, in the future -- and when I say you, I'm talking about Portland -- was that a comparatively new science insofar as study is concerned?

A Very much so.

Q Why?

A Portland General Electric Company has historically, within recent history, been a hydroelectric-based company. The energy we have marketed has come from the hydroelectric resource and it is only with the expiration of our Bonneville contracts for hydroelectric energy that we have begun to move into the themal generation era. Our first entry into that era is the Trojan nuclear plant, the Summit Diesel generating plant, the Harborton,Bethel and Beaver combustion gas turbine projects, but the Boardman project is our first coal project. The state of knowledge within our company regarding coal utilization in 1972 was quite limited, and as far as the detailed knowledge is concerned, it was my responsibility to bring that into the company.

Q You mentioned the study of coal. Would that also include the study of coal transportation rates?

A Yes, that's a part of the overall process.

Q Now, then, turning your attention once again to Exhibit DNR No. 18, you do refer to it at pages 2 and 3 of your prepared testimony. Now, at the time that Exhibit 18, the study of April 1972, was prepared, what alternatives were you considering at that time?

A At the time the study was prepared, we were, as we are now, pursuing the nuclear alternative, and our interest was in determining how the coal raw resource compared to nuclear in terms of delivered energy cost to the PGE system. The inclusion of oil-fired simple cycle gas turbines and combined cycle in that study was to show the relationship of those resources into which we were also at various stages of commitment.

Q Well, you did make a study of Colstrip and Boardman in that particular study, did you not?

A We included Boardman and Colstrip, but the study was not specifically to determine a choice for a decision between those two resources. Those two resources both constituted utilization of coal as the raw resource, and the main thrust of the study was to compare coal with nuclear with oil.

Q Well, calling your attention to the Boardman and Colstrip studies, what was the basis of your Boardman study?

A The basis of the Boardman study was the location of a coal-fired generating station at Boardman receiving coal by unit train over the Union Pacific Railroad from an as yet untapped coal reserve in southwestern Wyoming, a distance of approximately 810 miles from the plant.

Q Now, you say Wyoming. Would you designate an approximate location for that?

A In the area of Rock Springs.

Q Now, then, calling your attention to Colstrip, what was the basis of your study relative to that?

A The basis for the study for Colstrip was the then current official estimate of the project from Montana Power prepared by Bechtel, and I believe, C. T. Main, for the transmission portion, and it assumes, of course, mine-mouth generation with the coal mined at the site and then transmitted by EHB transmission, ultimately, to PGE consumers.

Q Now, then, were you at that time comparing coal shipped from Colstrip to Boardman? Is that the basis of the study?

A No, that was not a part of this study.

Q I note at page 3 of your testimony, line 7, you state that "a similar study today would show that costs of a mine-mouth generating plant at Colstrip and transmission to the Portland General Electric network would be substantially lower than the cost of purchasing and shipping coal to Boardman, Oregon." What is the reason for that statement

A If we were to make such a study today, if I were to make such a study today, I would crank into it all of the knowledge that I have accumulated since 1972, on how railroads set rates, what is going on in the rail tariff business as far as escalation and base tariff setting is concerned, and I would include knowledge of the impact of things like two line hauls, which would be involved from Colstrip because it would initiate on the BN and it would ultimately have to be delivered to the site over the Union Pacific, and there is a cost penalty associated with multi-line hauls. Such a study would also consider the availability and the price of coal, the sulfur content of the coal, and its impact on the Boardman plant, as it would be utilized, and --

Q What about the rail mileage?

A The rail mileage would be in the vicinity of 1,040 miles, which would be 230 miles greater than the mileage that was used in the Boardman coal-fired study that's in Exhibit 18, so if you were to redo that study, assuming the coal source for Boardman from Colstrip, you would have to substantially raise that curve that's shown for Boardman coal for the reasons set forth in my previous statement, being, specifically, the increased mileage of 230 miles, the two-line haul, which I believe at this point would work a penalty of approximately $1.70 a ton, according to our regression analysis work, and the higher sulfate content of the Colstrip coal would raise the plant cost, because we would add scrubbers.

Q At the top of page 3, you indicate that these studies -- and you're talking here, once again, about the study that you have been talking about, Exhibit No. 18DNR, you state the study did not take into account escalating rail costs versus the cost of transmission costs over the life of the plant, but rather, reflected only the projected 1978 costs. Why didn't you escalate the rail costs at that time?

Q In the first place, I wouldn't have known how to do it, because

I didn't have the experience with rail rates that I have today, but secondly, the kind of graphical presentation that is represented in the figure with Exhibit 18 is frequently used to produce the relative costs in a given year, because the hours of operation on the abscissa are hours per year. This was a representation of how we felt the costs would look in 1978. Of course, to produce an economic comparison representing levelized costs over the life of the plant, then one would have to take into account the high escalation rates on rail tariffs versus the virtually constant fixed costs for EHV transmission. That, too, of course, would tend to displace upward the Boardman coal-fired curve relative to the Colstrip mine-mouth generation curve.

Q Now, then, I'd like to get away from Applicant's Exhibit No. 232 for a short time, and there has been introduced into evidence DNR Exhibit No. 19, a memo dated April 25, 1974. Are you familiar with that particular memo?

A Sure am -- I wrote it.

Q Would you explain what that memo and what the purpose of it is, and why?

A At that time we were looking for coal for the Boardman project and we had retained the eminent, now deceased, coal consultant, Carmel Patton, from Rock Springs, to evaluate the resources that would be potentially available, and this would be to confirm, in his expertise, work that we had done on GRIT for the previous two years, and the purpose was to show where the most probable economic coal reserves would be to guide and direct our acquisition program, so Pat prepared the coal costs, which appear under the sixth column on that exhibit, using a very nice computer simulation model that he had, which models the mine costs, based on stripping ratios and extent of reserves and all of the things that go into making up a mine cost, and then he included a fair rate of return in the model to produce the cents per million Btu shown. Then, we combined with that coal cost -- and I might add that coal cost does not reflect the competition within the market place for coal -- in fact, we were very much surprised to see the difference between the model costs, including fair rate of return, and the actual quoted prices on coal, once we began to pursue these alternatives. There was quite a bit of upward pressure on price at that time caused by a very great increased demand for coal because of what appeared to be an immanent shift away from oil to coal. That was just on the heels of the Arab oil embargo, so we combined with this coal cost estimate the costs that we would have to incur to move the coal to the plant, that being the railroad tariff, and then I included a cost for rail cars and maintenance of those cars, and that gave us the total delivered cost in cents per million Btu that we could expect at the Boardman plant from these various reserves, and the purpose of the memo and of the study was to guide our fuel acquisition program.

Q You mentioned that you did not include in that particular study any actual additions of the competitive market?

A That's correct, because at that time, we had not contacted each and every one of these potential suppliers to get an actual bid price. What we were working with here was the model price based on his mine cost model.

Q Did he crank in there any actual figures obtained from railroad companies relative to the cost of transporting coal?

A No, he did not, but the numbers that I used under the rail tariff were numbers that I had obtained from the railroad for these purposes. This appears under footnote 2 in that exhibit, loading charges, the haul charge in mils per ton mile and the penalty for two-line haul. I'm sorry, I've been saying 18, I think. It's Exhibit 19.

Q Now, then, I'd like to call your attention to Exhibit No. 20, that is, DNR Exhibit No. 20, and ask you if you are familiar with that?

A Yes, I am very familiar with it. I prepared it, of course.

Q What was the purpose of that study?

A The purpose of that study -- by the time this was done, we had proceeded some seven months -- six months -- into the coal acquisition effort, and the purpose of this was to compare a potential reserve by Arch Mineral, in the Red Rim area in southwestern Wyoming, with what we then had as a firm quote from the Amax Coal Company in Gillette,Wyoming, so the top line of that study shows an estimate of the rail tariff, an estimate of the PGE car ownership, and a firm price on the coal which, when all combined, gives the total delivered cost. The purpose of this study was to then work backwards from that delivered cost, cranking out the rail tariff and car ownership, to find out what we could afford to pay for the coal from Red Rim and still be competitive with Gillette,and what it shows is that if we had been able to get that coal for less than

$9.12, we would have had a better deal than Gillette, and one thing I should point out, comparing these two exhibits, Exhibits 19 and 20, you'll note that the Amax coal cost is shown at 29 cents per million Btu. This demonstrates very graphically the point that I made regarding Exhibit 19, which stated -- in which I stated that that coal cost in Exhibit 19 did not include the pressures of the market place, and you will note that coal from the northern Wyoming Powder River Basin area was modeled to cost between 11 and 13 cents per million Btu, but when you finally got around to signing the contract and buying the coal, you're looking at 29 cents per million Btu, the difference being what I would call, in part, competitive pressures of the market place and also, in part, the effect of double digit inflation in the economy for two years.

Q Now I'd like to call your attention once again to Applicants' Exhibit No. 232. This is the historic comparison of generation resource relative costs. Now, then, if you will note the study of 9/75 on there has a figure of 1.19 for coal-fired mine-mouth at Colstrip, does it not?

A Well, that's not a cost. That is a relationship to nuclear. It says that Colstrip would be 19% more costly than nuclear in eastern Oregon when you compare the delivered energy cost to the PGE system.

Q And you have nuclear, Pebble Springs, in that particular tabulation, as 1.00?

A That's correct.

Q That is the base from which the others were compared, is that correct?

A That's correct.

Q And I notice now that the coal-fired unit train at Boardman has a figure of 1.71. What does that indicate?

A What that indicates is that energy delivered to the PGE system from the Boardman plant at 80% capacity factor would be 71% more costly than from nuclear at Pebble Springs.

Q Would you tell us about your 9/75 study? Who prepared that?

A I did.

Q And would you explain how you went about obtaining those figures?

A The entire study?

Q Well, generally. Do you use a computer, or just how do you go about this?

A Well, what we do is, we maintain the best possible records of plant costs -- I mean construction costs -- we maintain the best possible records on fuel costs and transportation costs, and at a given point in time, when a study is requested, we will then make a run utilizing a computer program which we developed, using the current data as it resides in our program. Does that answer your question?

Q Now, then, calling your attention to the January '76 study -- and I think you explained that in your written testimony --

A Page 4.

Q At page 4 -- and you indicate there, at the top of page 4, that nuclear energy is a lost cause except for geothermal dry steam, is that right?

A That's correct.

Q And geothermal dry steam has a factor or figure of what, in your 1/76 study?

A Geothermal dry steam?

Q Yes.

A It's .67.

Q I notice that is the same as the previous figure in your study of September '75.

A That's correct.

Q What is the reason for that?

A The reason is the same?

Q Yes.

A Because the same escalation factors were applied to the geothermal as to the nuclear and they move together in the same relationship.

Q And what is the figure for nuclear in the 1/76?

A 1.00.

Q And you have nuclear Trojan?

A Yes.

Q As .79?

A That's correct.

Q What does that indicate in relationship to your nuclear Pebble Springs?

A It indicates if we could build another Trojan, it would be a good buy.

Q Now, then, going upwards, your coal-fired mine-mouth Colstrip figure as of January '76 is what?

A Colstrip is 21%, more costly than eastern Oregon nuclear.

Q And what about your coal-fired train unit at Boardman?

A The coal-fired unit train at Boardman is 98% more costly.

Q How did you upgrade your September '75 study into your January '76 study?

A Well, relative to Colstrip, I have in all cases utilized the official cost estimates that have been prepared by Montana Power Company and transmitted to us as a participant. As I recall, the cost of Colstrip between those two studies did not change, but what I did change was the nuclear costs so the base shifted. I'm not 100% certain on that; I would have to check, but in any event, the difference is very slight. If they move, they move very close together. The most notable departure, of course, is the coal plant at Boardman, and there were two factors contributing to the increase on that. One is a more definitive plant cost estimate from our architect engineer, which was considerably greater, and the other was a significant increase in the rail tariff proposed by the Burlington Northern and the Union Pacific.

Q We'll get into the rail tariff later, but I would like now to call your attention to Applicants' Exhibit 232-A, which is a similar study, only based on a 60% plant factor, and I don't think there's any use in going into those figures, but as compared to the Colstrip, coal-fired mine-mouth Colstrip figure for January of '76, what is the Boardman figure?

A 1.84.

Q And that indicates what?

A That it's a 60% capacity factor. The coal is 84%, more costly than nuclear, at 60%.

Q That's as far as Boardman is concerned?

A Yes.

Q And as far as Colstrip is concerned?

A At Colstrip, it would be 17% more costly. I could elaborate on that relationship, if you wish.

Q Well, go ahead.

A It's rather straightforward.

(WITNESS GOES TO THE DRAWING BOARD.)

A On a power plant cost analysis, if we were to look at the mils per kilowatt hour versus capacity factor, and let's, for purposes of illustration, say the two we are interested in are out here at 60%, or .6 plant factor of 80%, the nuclear cost, if you don't run the plant, is very high because you have a very large fixed cost, but then, as you run it, it comes down more dramatically, and it's very similar to that with the mine-mouth generator plant, because your fixed cost is high, but your incremental is relatively low, so the relationship is shown between Exhibits 232 and 232-A, at 80% and 60% plant factor, and it just simply shows the difference in slope, that you would be coming down more steeply on Boardman coal than on either nuclear -- this would be Colstrip (indicating) and this would be Boardman coal.

Q And you've labeled those three lines running from the top to the bottom?

A That's correct. The top one is Boardman coal, the center one is Colstrip, and the bottom one is eastern Oregon nuclear, and you see that the relationship changes between these three at the two plant factors selected for the two exhibits. It's easier to illustrate it that way.

Q Would you mark that, please, Applicants' Exhibit No. 232-B?
(WITNESS DOES SO.)

MR. SHENKER: No objection.

HEARINGS EXAMINER: 232-B will be admitted for illustrative purposes.

Q Before we get into the railroad figures insofar as your January '76 study is concerned, I would appreciate your giving us your background insofar as your contact with railroad companies and your knowledge of railroad rates.

A I'm sorry -- with reference to which exhibits?

Q None, particularly -- your background relative to your contacts with railroad companies, as well as the costs of moving coal unit trains.

A I began, as I stated earlier, to investigate coal as a resource for PGE in late 1971. The first result of that was the April '72 study. At that time, I naively called the railroads and various utilities that were hauling coal by rail, and I said, "What would you use for an estimate of what it might cost to transport coal by rail?" I received estimates like five or six mils per ton mile. Well, that's a nice number to work with. You can change the number of tons, you can change the number of miles and can still come up with a cost estimate. Well, for those early studies that kind of refinement or lack thereof, was adequate, but then, as we began to move more seriously toward utilization of coal, it became evident to us that there were numerous reasons why coal was a potential resource for PGE, and I began to explore in more detailed fashion the true methods of pricing movements of coal, and to make a long story short, it was interesting to find out that indeed, the pricing of coal movements is not done by handy little formulas in terms of five or six mils per ton mile, but it's done what might more aptly be called, in the words of the President of the Union Pacific Railroad, in whose office I was, two weeks ago, he told me that rail rates are set on the value of the commodity moved. A modification of that statement might be that it's -- let's put it in Peter Rabbit language -- it's what the traffic will bear. Now, what the traffic will bear is determined by what alternatives are open to you, and anyone who has shipped anything by rail, be it grain or lumber, knows that it's a very competitive business. The rate setting is done in a very heated, competitive arena. If a truck line is intent on getting the business, and the rail is intent on the truck line not getting the business, that has a profound impact on the outcome. Similar for barge lines, similar for slurry pipelines, similar for EHV transmission, so we were a rather confusing entity to the railroads when we began to ask them for tariff quotations, because they really did not know what our alternatives were. Most companies that have already been in the thermal generation era for some time, using coal, have fixed movements of coal from different locations, and they know -- they being the railroads -- they know what the alternatives are to that particular utility. In our case, they did not know. It was very difficult for them to look at, for example, data that's in the public record with the Federal Power Commission on our resources and our power costs, for them to determine just what kind of a rate they could establish, and furthermore, there were no volume coal shipment rates established in the Pacific Northwest, and there still are none, so we are precedent-setting in our action, so the entire concept of comparing transportation of coal by rail versus other alternatives, is one that is shot through with uncertainty, the uncertainty being that of the competitive market place. If you remove the competitive form, if you remove, by legislation, the slurry pipeline, if you remove, by whatever reason, electric transmission, if you remove the truck lines, if you remove the barge lines, or you're in an area where there are no barge lines, you're at their mercy.

Q When did you first start pursuing the cost of moving coal, as far as the date is concerned?

A As far as -- ?

Q The costs of moving coal by railroad?

A As I stated, in late '71.

Q And you have been involved in that ever since?

A Yes, I have.

Q Now, then, turning to your Boardman plant; what is a coal-fired generating unit?

A Correct.

Q And you are going to ship coal to that from any particular area, or has this been decided?

A Yes, we have a 20-year signed contract with Amax Coal Company from Gillette.

Q That's Gillette, Wyoming?

A That's correct.

Q Have you been in the process of negotiating with any railroad as to the cost of moving that coal to your Boardman plant?

A Very much so.

Q When were these contacts first established?

A Relative to the move from Gillette, that would be at about the time that I -- let's see, which exhibit is it -- I can get the date off that. It would have been in mid '74, when we began to get specific because -- these two exhibits very nicely bracket the time wherein we did get quite serious in our discussions with the railroads.

Q When you say these exhibits, what are they?

A I'm sorry -- Exhibit 19 and Exhibit 20 DNR.

Q Since that time you referred to, have you been in contact constantly with the railroads relative to the cost of shipping the coal?

A I certainly have.

Q Do you know, as far as the total cost of producing energy in the Boardman plant, what percentage the cost of shipping coal will be?

A The railroads would like to see it about 30%.

Q And is it your estimate that it could be in that area?

A It could be in that area.

Q Have you received any offer from Burlington Northern or any other railroad relative to the cost of shipping coal from Gillette to Boardman?

A Yes, I have.

Q Were you involved in these negotiations?

A Yes, I was. Yes, I am -- they're still going on.

Q Do you form a part of the Portland team regarding these negotiations?

A Yes.

Q You've been in constant contact with them?

A Yes.

Q Can you tell us what companies you have been dealing with?

A Most actively, of course, with the Burlington Northern Railroad, on whose line the shipment will originate, and the Union Pacific Railroad, on whose line -- or from whose line, the plant site is served.

Q What would be the route of the shipment of coal from Gillette to Boardman?

A Well, the exact route, as I recall from memory, would be from Gillette through Helena to Sandpoint to Spokane, at which point it would be interchanged with the Union Pacific, and from Spokane, then, to Boardman.

Q To Spokane from Gillette, what train would be involved?

A The Burlington Northern.

Q Insofar as the original estimate given to you, or costs given to you by, I presume, Burlington Northern, what was that figure quoted?

A $12.57 a ton.

Q Do you know how many mils per ton mile that would be?

A I just calculated.

Q What would it be?

A 10.86.

Q Is that using railroad cars for the shipment, or is that using company-owned cars?

A That's using shipper-owned or company-owned cars. If it were possible to get the railroad to furnish the cars, which we would much appreciate, because we're not in the railroad business, and we don't look forward to getting into the railroad business, that would probably add another $1.70 per ton.

Q What is that increment in mils per ton mile?

A Well, on our run, it would be 1.46.

Q Difference?

A An adder.

Q For railroad-owned cars. Now, are you still in the process of negotiating?

A Yes, we are.

Q Has there been any final figure decided?

A No.

Q And have you asked for a figure from the railroads as to railroad-owned cars?

A Yes, we have.

Q And are they in the process of getting you that figure?

A Yes, sir, they are; at least, they said they would, but they say they'll do a lot of things as far as providing information, and it's very difficult to get it from them.

Q Would you say that the negotiations, then, are still in doubt as far as any final figure is concerned?

A Very definitely.

Q In tabulating your figures in your January '76 study, and I'm referring again to Applicants' Exhibits 232 and 232-A, what railroad figures did you use?

A The January '76 study that resulted in the 1.98 comparison on

Exhibit 232 incorporates the $12.57 per ton quotation. That quotation is in today's dollars, effective through June 30, 1976.

Q Insofar as the January '76 study is concerned, what type of an escalation figure did you use?

A For the rail rate?

Q Yes.

A Well, that's a difficult thing. As I said before, when I did the 1970 study -- '72 study -- it just completely eluded me, and I just showed the results in terms of an estimated cost during 1978. Since that time, we've studied a lot of things, like GNP deflaters and AAR indices, and what we've done is, we have determined to use an 8% escalation of the AAR index, and then calculate the escalation of the tariff based on a formula presently in effect by the Burlington Northern, which keys to the AAR index and uses 80% of it, so if you took 80% of the 8%, the escalation would be approximately 6.4% per year over the life of the coal contract.

Q This is the figure you used in your January '76 study?

A That's correct.

Q Did your company, to your knowledge, ever contact Western Energy Company regarding the obtaining of coal price quotations from the company for use by your company at the Boardman plant?

A Yes, we did.

Q Do you know approximately when that contact was made?

A Well, let's see -- the date on Exhibit 19-- the initial contact would have been made on approximately the same time that

Exhibit 19 was prepared, and I believe it would have been earlier than that, because I didn't actually prepare this tabulation until we had already done some investigation work and requested information -- somewhere between January and April of '74.

Q And who was contacted at Western Energy, do you know?

A Yes, I know exactly who it would have been -- Paul Schmeckel.

Q Did you subsequently receive an answer from Western Energy?

A Yes, we did, we received an answer on March 6th of '74.

Q And what was that answer?

A That answer was that he was very interested in our stated need for a coal supply, but he was unable to offer us anything because he had committed his reserves through and beyond the point where we would require coal; in other words, he had nothing to sell.

Q I think you indicated previously that at present, no coal is being shipped to the Northwest for generating plants, is that right?

A That's correct.

Q Will Board be the first, as far as you know?

A Yes.

Q Do you have an opinion as to the future possibility of shipping Colstrip coal to the Pacific Northwest for use at generating plants?

A Well, from my own viewpoint, speaking for Portland General Electric, because I'm really not in a position to speak for the other northwest utilities, but maybe I can make some general observations, the factors that impact the selection of coal are, of course, the coal quality, including heat content and sulfur content, ash content, moisture, fusion, ash, ash-fusion, temperatures, chemical constituents in the ash that impact your boiler performance, coal quality, distance from the plant; whether the reserve would be served by one or more railroads; as I have previously indicated, involving more than one does incur a financial penalty. I guess I've stated availability of the coal, and of course, the cost, the cost of the coal.

From that standpoint -- I guess I've defeated using that. You would do something like was done in the study that's shown in Exhibit 19 and you would put together all of these economic factors, along with the other non-economic factors, such as availability, and I guess what I'm saying is that from my standpoint, there are more promising coal reserves in southwestern Wyoming than in Montana. Now, serving Oregon from Montana, involves a two-line haul, as also, from northeastern Wyoming. Southwestern Wyoming involves a one-line haul. Now, if I were a Washington company, the Washington company would be on a one-line haul from Montana, but the distance would be greater, and the quality question would come up. Most of the Montana coal, Colstrip, Westmoreland, Decker, have quality problems. Decker has high sodium; Westmoreland and Colstrip have high sulfur -- not high sulfur -- all western coal is low sulfur, but by high, I mean whether or not you can meet the 1.2 pounds SO_2 per million Btu, and if you can't, I call it high sulfur, because that throws you into the same game that they're in with the 2% sulfur coals in the east, but I just wanted to -- in case there were any Easteners, they might think of high sulfur coal as being 3½% or more sulfur, but generally, I think the prospect of moving this coal to the Northwest -- I mean, it's certainly something that we are going to need. We're going to need coal to meet our needs, and when you look around, we don't have any coal in the Northwest. All we have is lumber, and we've got some good salmon and some good crab and we put all that stuff in cans and rail cars and ship it east and we're going to have to ship some coal back west.

Q Turning your attention now to Colstrip coal once again and getting away from the crab and the salmon, what are the possibilities of shipping Colstrip to the Pacific Northwest in the future for use of generating plants?

MR. SHENKER: Mr. Davis, I don't have the personal problem of trying to make a 10:45 plane any more, but notwithstanding, I think we are now at the stage of repetition. This is the third time the same question has been put to the witness, and the second time, we had a very long answer to the question. I think on redirect, we're beyond the limits.

HEARINGS EXAMINER: Do you feel that's an area you haven't covered?

MR. BELLINGHAM: I want to call his attention specifically to the Colstrip coal. He covered generally, Montana coal, and I want to get him back into Colstrip.

HEARINGS EXAMINER: All right, put him in Colstrip coal.

Q Would you direct to Colstrip coal?

A Colstrip coal has too high a sulfur and it's not available, so as far as I'm concerned, the potential of shipping Colstrip coal to Oregon for use in our plants is relatively slim.

Q What about Washington?

A I can't speak for Washington. Washington doesn't have the two-line haul problem, so Colstrip coal would eliminate that problem. It could be originated and terminated on the BN, which would save them at least a buck seventy or a buck fifty a ton.

Q Well, say if Colstrip coal was available, what would the chances be?

A Well, I think they would look very hard at it, and I think that for a Washington company, Colstrip coal would be a viable source if it were available. I have not made an inquiry of Paul Schmeckel since this, but of course, we signed our contract with Amax.

Q Well, would the sulfur content have a tendency to limit its use?

A Well, the higher sulfur content is going to necessitate SO_2 removal, so that will work a penalty against it, although it could be used. The coal can be used. It will be something that we will have to crank into the economic analysis.

Q You previously testified that Montana Power would not be interested in the Boardman proj ect, upon cross-examination. Why did you make that statement?

A Well, what you would essentially be doing is taking coal from the Rocky Mountain states, shipping it to the West Coast to generate electricity, which you would then ship back to the Rocky Mountain states, and there are better ways of running a railroad.

Q I think you previously testified that as far as DNR Exhibit No. 28 is concerned, it indicates a 15% uncommitted total of the Pebble Springs project, is that right?

A That's correct.

Q No designation is contained in that particular exhibit relative to the possibility of who is going to be taking that 15% in the future, is there?

A Nothing is contained in the exhibit, that's correct.

Q It states "others," isn't that right?

A Yes, it states "others."

Q Do you have any knowledge of who those others might be?

A Yes.

Q What is it?

A Well, the Trojan plant, for example, has a 30% public participation, the Eugene Water and Electric Board being the participant with the energy from that 30% being delivered to BPA and to other contractual partners for the energy on a net billing arrangement. This 15% has been allocated to public participation. My hesitation to get into this before is quite simply that the agreements have not been signed, and it takes a long time to get all the ducks in a row, so to speak, when you're dealing with quite a large number of member co-ops in public agencies, but my knowledge, which you have asked for, is that this 15% is allocated to public participation.

Q When you say public participation, what do you mean?

A Well, I mean the co-ops.

Q I assume that is not entirely fast at this time, and subject to further negotiations?

A That is correct.

MR. BELLINGHAM: No further questions.

HEARINGS EXAMINER: Mr. Shenker, I would judge that you had considerable re-cross of this witness?

MR. SHENKER: I would think about 25 minutes.

HEARINGS EXAMINER: I'm also wondering what your schedule is, Mr. Woodley. Will you be here this afternoon?

WITNESS: I'm on the same schedule as Mr. Shenker.

HEARINGS EXAMINER: What I'm thinking about, and I'm not going to make any decision until I hear from you fellows is, if there would be any objection to taking these public witnesses and then putting him back on, since I did request them to come in early this morning, and they've been sitting here quite a while. If you're going to be here anyway, I'd like you to consider that.

MR. SHENKER: No problem.

HEARINGS EXAMINER: All right, let's take Mr. Woodley off the stand and we'll take the public witnesses and then we'll put him back on when we get through with them if that's agreeable.

(WITNESS EXCUSED TEMPORARILY.)

HEARINGS EXAMINER: Thank you, gentleman. Let's take a recess.

(HEARING RECESSED AT 10:55 A.M.)

The hearing was reconvened at 11:10 A.M., following a brief recess.

R. D. HEARST, appearing as a public witness, having been first duly sworn upon his oath, both as to his written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF R. D. HEARST WAS DIRECTED TO BE INSERTED AT THIS POINT.)

ASARCO Incorporated

EAST HELENA PLANT
EAST HELENA, MONTANA
59635

TEL. 406-227-5311

STANLEY M. LANE
MANAGER

R. D. HEARST
SUPERINTENDENT

C. G. DeGOOYER
CHIEF ACCOUNTANT

February 13, 1976

STATEMENT PREPARED FOR THE BOARD OF NATURAL RESOURCES HEARING RE COLSTRIP 3 & 4 AND TRANSMISSION LINES PROPOSED BY MONTANA POWER

The East Helena Plant of ASARCO Incorporated is a custom lead smelter competitively purchasing ores and concentrates from the Western United States, Canada, South America and Australia.

Although there are no large lead mines in Montana, the plant serves as a market for numerous small operations and its requirement for siliceous fluxing ore is supplied by Montana mining operations. Payment for the gold, silver, lead and copper content of ores and concentrates is made under purchase schedules.

Since the intake of concentrates changes continually due to the depletion of mines and competition for the material, the production of metals varies greatly. In 1975, the plant processed 235,500 tons of material, producing 112,000 ozs of gold, 18,700,000 ozs of silver, 58,600 tons of lead and 7,460 tons of copper in by-products.

In July of 1972 the adjacent zinc fuming plant was acquired from The Anaconda Company. This unit produced 26,100 tons of zinc oxide in 1975.

The East Helena Plant requires large amounts of electric power for which it is totally dependent on the Montana Power Company. In 1975, 36,111,360 KW hours were used. It is essential that we have an adequate source of electric power, not only for present operations, but also for future requirements. In this regard, environmental regulations have forced us into a commitment to build a 500 ton per day sulfuric acid plant. The acid plant will require approximately 5670 KW/hr. or 49,669,200 KW hrs per year which will more than double the present usage, i.e., a 138% increase.

Furthermore, we have already reached the limit of our existing transformer capacity and have appropriated $700,000 to install a new power distribution system. That we have reached this limit is largely due to a continuing effort to improve in-plant environment, i.e., improved ventilation which requires more power for fans.

It is apparent that we must have a reliable and adequate source of electric power if we are to continue to provide employment and a tax base for Helena and the State. We provide employment for over 300 people with a payroll of $4,000,000 in 1975. A 1974 study by the State Department of Intergovernmental Relations showed an economic impact on just the Helena area of $10,000,000 per year attributable to the East Helena Plant.

We must also have substantially more electric power in order to comply with the environmental requirements, both in-plant and out-plant, of the State and Federal governments.

As I understand it, the background of this hearing concerns the environmental issues relating to the proposed new power plants, Colstrip 3 and 4, and the siting of necessary power lines. The need for a 138% increase in electric power for the East Helena Plant also involves environmental issues. We cannot have one without the other.

Thus, I strongly recommend prompt approval of Montana Power's plans to increase its power output and the siting of its power lines.

R. D. HEARST
Superintendent
East Helena Plant

HEARINGS EXAMINER: Mr. MacIntyre.

EXAMINATION OF R. D. HEARST

Cross, by Department of Natural Resources and Conservation

By Mr. MacIntyre:

Q You're representing ASARCO?

A Yes, sir, ASARCO Incorporated.

Q In connection with these proceedings, have you reviewed either the Westinghouse Environmental Statement or the Department of Natural Resources Environmental Impact Statement?

A No, sir, I haven't.

Q In your statement, on page 2, you state that in regard to environmental regulations, they have forced you, ASARCO, into a commitment to build sulfuric acid plants. By the term "forced," do you mean to imply to this Board that you are not concerned with the environment in the state of Montana?

A ASARCO is concerned about the environment.

Q Is it not true that indeed, ASARCO agreed to the facilities that they are now putting in?

A Yes, sir, that's correct. We're just stating that it is going to require more power.

Q You also, on the same page, the last paragraph, make the statement: "We must also have substantially more electric power in order to comply with the environmental requirements." Is it not true that your commitment is a present commitment?

A We have a present commitment, but we have ongoing commitments to comply with. OSHA standards are being continually changed. We have both -- primarily inplant -- we hope that our acid plant will solve our out of plant problems.

Q And the environmental pollution control that you are now putting in and are being required to put in by the State of Montana is a present commitment?

A Yes, that is correct.

MR. MacINTYRE: I have no further questions.

HEARINGS EXAMINER: Very well, thank you, sir. Your testimony will be incorporated in the record of these proceedings and go to members of the Board.

MR. HEARST: Thank you.

HEARINGS EXAMINER: Yes, sir, you are excused.

(WITNESS EXCUSED.)

HEARINGS EXAMINER: Mr. Groff.

S. L. GROFF, appearing as a public witness, having been first duly sworn upon his oath, both as to his written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF S. L. GROFF WAS DIRECTED TO BE INSERTED AT THIS POINT.)

MONTANA BUREAU OF MINES AND GEOLOGY

BUTTE, MONTANA 59701

[illegible] DIRECTOR

STATEMENT—Favoring Construction of Colstrip Units 3 and 4 and the Transmission Line.

A presentation to the Board of Natural Resources, by S. L. Groff, Director and State Geologist.

Mr. Chairman, Members of the Board, Ladies and Gentlemen.

I consider it my duty as State Geologist to appear in support of the early construction of Colstrip Units 3 and 4 and the related transmission line. Under normal circumstances the State Geologist does not appear before any hearing in a pro or con position, but takes the position of state witness for the purpose of presenting facts and opinion. This hearing is, however, unique and I must stand up to what I believe to be the best interests of the citizens of Montana.

I appear here today without urging or pressure from any group or individual. I am not an employee of any utility and never have been. I am not constrained to agree or disagree with either a utility or the Department of Natural Resources and Conservation. The interests of the people come first, and they shall be served to the best of my ability.

On January 6 of this year I wrote to Mr. Albert Tsao, Administrator, Energy Planning Division, Department of Natural Resources and Conservation. That letter is attached to this statement as "Exhibit A". I will read it into the record.

(READ EXHIBIT A)

My opinion has not changed since the letter was written. Events since that time, however, have served to strengthen the argument in favor of early construction of new generation capacity for the State of Montana. In my opinion, neither the utilities nor the Department of Natural Resources and Conservation has adequately stressed the need for additional electrical generation facilities in the state. I do not criticize, for hindsight is better than foresight. I am not a Monday morning quarterback. It is virtually certain that both the utilities and the Department would place far greater stress on that need if their reports were written today.

It is my conviction, based on the energy and material needs of the nation, that the growth of electrical energy use in Montana will accelerate far beyond what was predicted previously. It is quite possible that generation facilities will be insufficient to meet demand in the late 70's until Units 3 and 4 go on line. It now seems probable that additional generation beyond 3 and 4 may be needed. WHY?

Spaceheating

My January 6 letter stressed the pressing need for growth of the Montana mineral industry and of pumping for irrigation. At that time, I did not anticipate the Canadian action that caused escalation of natural gas prices and phased reduction of gas exports. Gas reserves are finite; they are being depleted. Low-cost gas will soon be a fond memory. We are entering a period when spaceheating by electricity is becoming attractive. The comparative cost of electricity vs. gas is important, and eventually gas may become more expensive than electricity. Electrical spaceheating is going into new buildings now. Is it reasonable to believe that people are becoming concerned about availability of natural gas?

Electrical spaceheating may well become the standard of the future. Should this happen, current and planned new generation capacity will come up short. Units 3 and 4 will be urgently needed, as will new delivery systems.

Montana winters can be rigorous. It seems only reasonable that we should plan ahead and build now–so that crisis and catastrophe can be avoided in the future.

The Mineral Industry

The use of clean, efficient energy by the mineral industry is bound to increase, for the "arab syndrome" is now worldwide. This nation will pay more and more for imported raw materials. This nation will be forced to utilize its own resources and produce commodities that are not economical today.

Montana just happens to be a vast repository of energy and mineral materials. Then it is reasonable to assume that mineral industry growth in Montana is inevitable. In my opinion, it will become Montana's leading income industry sometime in the early 80's.

How much electricity will this industry need? I do not know. All I can say is that a single mining district, producing, concentrating, and processing iron, chromium, platinum, copper, nickel, and aluminum might utilize 250 megawatts. This is only one district; there are others. Electricity is preferable because it is not environmentally objectionable and it is 100% efficient at the site of use.

The district mentioned contains the bulk of North American chromium and may be in a similar position with respect to platinum. These are strategic minerals; the nation will need them. At this time the ore of aluminum is bauxite, which is virtually all imported from foreign countries. A rock called anorthosite is a potential source of aluminum. As the import price of bauxite goes up, anorthosite becomes more attractive. If Montana's [illegible] is procured and processed, the electrical demand could well be hundreds of [illegible]. As we know, the production of aluminum is an all electric process.

Other mineral deposits in Montana will be developed as the economics change. [illegible] amount of [illegible] will have to be processed in the state. Jobs will be available. Montana's young people will have opportunity and will not have to leave the state to find gainful employment. Adequate supplies of electricity are necessary to make all possible.

Irrigation

The economics of agriculture are expanding. Better prices equate to more agricultural production. New lands will be placed under irrigation. The only way to get water on many many acres is to pump it from rivers, streams, reservoirs, or ground water sources. Electricity is the safest and most efficient energy for raising water against the pull of gravity. Petroleum products will, in time, become too scarce and too expensive for this use.

Other Factors

Recently, the U. S. Geological Survey ranked Montana as No. 1 in the nation with more than 107 billion tons of coal minable by current methods. It is paradoxical that Montana has energy problems when within our boundaries we have such astronomical reserves of relatively low-cost fuel. There is simply no other way to go, coal must and will be used as a major energy source until the fusion power system has been developed and is on line. This will be 20 to 50 years in the future.

Estimates worked up in my office are probably as good as any in existence. In the period from 1970 to 2020, Montana's maximum production of coal might involve the mining of about five townships, or less than ½ of 1% of Montana east of Billings. These estimates were based on an average production of 120 million tons/year for 50 years from seams averaging 30 feet in thickness. It is doubtful that we will ever achieve that rate of production, thus the actual mined area could be considerably less than five townships.

The amount of water needed for the coal industry in the whole Fort Union Region has been a belabored and contentious matter. My estimates are that 1.8 million acre feet/year will be adequate. This figure of 1.8 million acre feet/year contains a large safety factor and agrees reasonably well with estimates of the Bureau of Reclamation. This represents the three state total. Montana's water needs for coal energy are 360,000 acre feet/year minimum and 720,000 acre-feet/year maximum. Again, we must consider that possibly we will never attain the maximum rate of production and thus, will use a lesser amount.

Comments relating to tearing up all of eastern Montana and drying up the Yellowstone thus seem to be based on hysteria and not on fact.

The Economic Situation

Montana citizens have the right to make a decent living. No able and decent man or woman wants welfare or unemployment benefits if they can enjoy the fruits of their own productive labor. One may wonder why we should have high rates of unemployment when we are sitting on one of the greatest energy resources in the world and the nation is experiencing an energy crisis.

Electricity is a key factor in moving from a recession to relative prosperity. There are jobs associated with construction of Units 3 and 4 and [illegible] lines, but this is just the start. Additional energy generation will be able to supply energy to old and new industry, which will retain jobs and create new jobs. Providing that my view of the future is correct, there will be a considerable expansion of employment in Montana. The jobs will be in production and processing of energy and agricultural and mineral commodities. There is every reason to believe that this type of employment will be permanent. The nation will need our products and a well planned and balanced economy is the keystone of prosperity.

Electricity is the key to Montana's economy. Without it we stagnate, with it we move forward.

The September-October 1975 issue of the Missouri River Basin Bulletin carries a quotation from the Director of Montana's Department of Natural Resources and Conservation:

> "It is the first priority of the State of Montana to protect and improve, to enhance and expand the agricultural and renewable resource base..."

This statement (as quoted) does not include nonrenewable resources the mineral fuels and mineral materials that are so essential to the economy of both the state and the nation. These commodities should necessarily be included in any state's priorities. Aside from this, I have no quarrel with the statement, but any measures taken to improve, enhance, and expand must involve energy.

It is my recommendation, my plea, and my hope that we in Montana move forward by approving the construction of Units 3 and 4 and the means to deliver the energy they provide.

EXHIBIT A

MONTANA BUREAU OF MINES AND GEOLOGY

BUTTE, MONTANA 59701

DIRECTOR

January 6, 1975

COPY

Mr. Albert S. Tsao, Administrator
Energy Planning Division
Department of Natural Resources and Conservation
32 South Ewing
Helena, Montana 59601

Dear Albert:

Reference is made to your letter of November 26, and the package of six volumes of the draft environmental impact statement on "Colstrip Electrical Transmission Lines and Associated Facilities".

The report is generally good, and much of the information will be of use in our work. We thank you for the copies.

Strenuous time commitments prevent a detailed review, but the following comments are believed to be pertinent.

Electrical energy needs

We agree that the projected national growth rate of about 10 percent for expanding electrical consumption is high and should decrease. It is probable that this annual increase has already slowed and that this slowing tendency will show up in the FPC statistics for 1975, if not for 1974. Montana's in-state growth has been running about 5 percent, or considerably less than the national average, but an estimate for the near future indicates that Montana may well go far beyond 5 percent annual growth. This estimate is based on two factors: (1) greatly increased production of both mineral fuel and mineral resources, including a reasonable amount of in-state processing, and (2) expansion of water pumping for irrigation. Both factors are being forced by international pressures and by shortages of energy, mineral materials, and food. The "crises" stimuli will not go away. Thus we may well expect strong federal pressure to produce to meet the nation's needs. We need not kid ourselves on this issue, for the pressure is building, and the public domain is federal property. When the Congress decides that federal lands must produce—then, production will be forthcoming. We hope that adequate data for land-use planning will be available.

The foregoing means that more electricity will [illegible] this in-state need may not be met by private utilities [illegible] 1 and 2 on line. We are all aware that a portion [illegible] out-of-state use. Further, we know of no assurance [illegible] of federal power to Montana. Electrical energy will [illegible] where the people's need is greatest, leaving Montana short [illegible] We must judge that Colstrip 3 and 4 could be depended [illegible] the next decade.

Frankly, we admit that documentation of [illegible] shortage trends we are now seeing [illegible] west. Yet, even here; can we deny the reasoned and planned [illegible] the benefit of our brothers and sisters in the Northwest [illegible] (Bureau of Mines and Geology) is taken from the aspect of national [illegible] and probable action dictated by a nationwide stimulus, a compulsion toward self-[illegible] pressure. We believe that the pressure will very definitely affect Montana's energy and mineral resources. Therefore, we strongly recommend planning for [illegible] and Units 3 and 4 are an essential part of any program. As a [illegible] dependency on federal hydropower is chancy, as it is much too closely related to climatic conditions.

Transmission lines

It is true that construction of transmission lines will have some adverse effect on the environment. Certain tradeoffs, however, are inevitable in the overall planning to meet the needs of the people, and their basic needs are paramount.

It is unfortunate that our technology has not yet provided efficient direct current transmission by underground cryogenic cable. Research on such a system [illegible] results are many years in the future. Thus, surface transmission lines [illegible] and we are forced to live with that reality.

We have conducted no in-depth study of the economics of [illegible] versus unit-train delivery of coal, but we disagree with the [illegible] all reasonable tenets, the movement of coal by rail seems [illegible]

[illegible] from the date [illegible] [illegible] may [illegible] [illegible] generating system will [illegible]

Any unilateral action by the [illegible] and perhaps the [illegible] It seems to us that a commitment [illegible] national transport of [illegible] resource must be made and made [illegible] the best interest of Montana, the region and the nation must be considered.

We believe that the [illegible] study [illegible] shipment of coal versus transmission lines is lacking in depth and could easily be [illegible]. Clear factual data on this economic comparison may be very hard to obtain and the [illegible] and other federal agencies may have to restudy their figures. From our view it seems most unrealistic that shipping vast quantities of coal by rail could, over the long term, be more economical than wire transmission. Also, the specific problem of the environmental impact of constructing generation facilities at the destination is growing worse.

As a final point, the report seems to show a general lack of confidence in the development of new and more efficient technology for reducing pollution and increasing efficiency. The national effort to do just that is a multi-billion-dollar effort. There is every reason to believe that scientists and engineers can solve the problems, provided they are given the incentive, the time, and the financing.

In view of all the foregoing, we recommend that the final E.I.S. cite approval for construction of both the Colstrip 3 and 4 generating units and the transmission line.

Sincerely,

S. L. Groff, Director
and State Geologist

SLG:eh

cc Dr. F. W. DeMoney
Dr. Lawrence K. Pettit
The Hon. E. W. Christiansen

WITNESS: Could I ask a question first?

HEARINGS EXAMINER: Yes, you certainly may.

WITNESS: I'd just like to point out that my statement was written about four months ago and the letter that's attached to it was written over a year ago, and there have been some changes.

HEARINGS EXAMINER: Very well, you can make any statement of corrections or changes that you wish before you are cross-examined. Go ahead and make those now, if you would like.

Supplement to Written Direct

By Mr. Groff:

On page 2 of my statement, under "The Mineral Industry," third paragraph, I have written in there: "How much electricity will this industry need?" I have a figure down there of 250 megawatts. That has been recalculated from data supplied by Batelle Northwest and the United States Bureau of Mines, and it is closer to a thousand megawatts. Going on a little bit further, since I prepared this, I think the opponents and proponents and the people of Montana have to realize we're changing all the time and -- I want to stay in protocol and I don't know how to say this, but I would like to add something to the end of the statement. Is that permissible?

HEARINGS EXAMINER: Yes, it is.

WITNESS: What I'd like to say is that in my opinion, no one -- myself as a scientist, an engineer, a public servant, whether he's elected or appointed, really should come before a body such as this or to the public and make any statement or implication that the energy resource, or the energy crisis that we're now experiencing, is something that is not serious, because all the information that I've put together, we're facing a very serious situation, and I'm very much afraid that it's going to get worse before it gets better, and I'd like to raise this question, which can go into the record. The question that I'd like to raise, and I've thought about this quite a bit, is, have we reached that point in time where we have gone beyond the point of no return? If we now consider the total energy needs of the nation and we move to produce coal and other materials and build furnaces, do we still have time to prevent a catastrophe at some time in the not too distant future? Okay, I'm ready.

HEARINGS EXAMINER: Mr. Shenker.

EXAMINATION OF S. L. GROFF

Cross by Department of Natural Resources and Conservation

By Mr. Shenker:

Q I appreciate your concern for protocol, Mr. Groff. Let me explain to you, sir, that the strictures of our proceeding generally involve the witness answering the questions instead of putting them, but your supplementary statement just now put a question, and I'd be very much interested in your answering that question for the record. Can you do that?

A All I would say, in my opinion, my answer would be, basically, I don't know the answer to that question, but I think a lot of people should be thinking about it.

Q I don't know -- it's always an honest answer when you don't know. Now, Mr. Groff, I've just been reading the fanmail of Mr. Sherburne's statement. Did you have a chance to read his statement?

A Just a few minutes ago, I got to it, yes, sir.

Q It says some nice things. Have you had a chance to chat with Mr. Sherburne before he came on up here today?

A Just on the telephone, and I told him I was coming.

Q I don't have much to ask you about the statement that you tendered for this record, Mr. Groff, but I have just a few questions. One of them involves the area that you corrected for us under "The Mineral Industry," and that's a power usage figure for the mineral industry, and once again, you follow the form of asking a question and providing the answer and the answer is "I don't know," but you say, "How much electricity will this industry need? I do not know." What you can say is that "a single mining district might utilize (originally 250 megawatts) now a thousand megawatts." We've got to define some terms so the Board will know what you're talking about, Mr. Groff. What's a mining district?

A Well, a mining district is an area where your mineral deposits are essentially the same, and you can have a number of mines, all mining essentially the same type of ore, and under the laws of the state, you usually set those up in mining districts and they're so described by engineers and scientists and surveyors.

Q How large an area does a mining district cover?

A It could run anywhere from 600 acres up to possibly over 100,000.

Q 100,000 acres, you mean?

A Yes, just acres.

Q How many companies could be involved in such a district?

A Well, the tendency throughout history is that when you start in such an area, you have many companies who form mines and then they begin to incorporate, create a mining district, and operate under mining district rules. Now, Mr. Shenker, I'm not an attorney, and I'm not an expert in mining law, but today, you find generally that the old mining districts are still in existence. There may be many mines within a given district owned by different groups of people or corporations. At the current time, the mining industry isn't doing as well as it could be, but the ownership is still there. You can look at large districts--say like Butte, where perhaps one company has the bulk of the ownership.

Q When you refer to a mining district, Mr. Groff, you're not referring to a legal description, you're referring to a geographic description, I take it.

A Let's say geographic by area and geological by scientific terminology.

Q Good. Now, the question I asked you, sir, was how many companies would operate in a mining district, as you use that term in your statement?

A How many could?

Q Yes.

A My answer to that would be very simple -- one or several.

Q Well, several? You could be talking about ten companies, a hundred companies? What do you mean, sir?

A I think if you get up to a hundred, you're getting a little high.

Q But something between 1 and 100?

A More likely, between 1 and 5 or 6.

Q Would one of those companies be something like the Johns-Manville Company?

A In the district mentioned, that is certainly possible, yes.

Q Johns-Manville, for example, has given some thought to a future mining activity at the Stillwater complex in Montana, hasn't it?

A That is quite true.

Q And their description of the electric power that they would need for that operation is what?

A I do not know; however, I would estimate that it would not be tremendously high.

Q No, they refer to it as minimal.

A Yes, because they are mining, let us say, platinum.

Q Well, their idea of a minimal is 10 to 15 megawatts. Would you agree with that description?

A I think in a small operation that would be legitimate, yes. I do have some figures here, Mr. Shenker, that I developed.

Q Some other figures, that are not in the record already?

A Well, these I didn't intend to put in the record unless I was asked.

Q What are they? Figures of other companies?

A No, these are figures computed by Battelle Northwest for the United States Bureau of Mines, and what they represent is a rather interesting thing. It's the total amount of energy required to produce a certain profit.

Q Well, Mr. Groff, we're not interested in cutting off useful information from this record, nor are we interested in encumbering the record with material that is not directly relevant to the issues before us. I don't know what you're talking about by way of figures and statistics, but you have every right to supplement your statement any way you want, so if you want to read some figures into the record and you think that's useful for this Board of Natural Resources, feel free to do so.

Additional Supplement to Written Direct Statement:

By Mr. Groff:

I think it could be, because it really shows something here. For instance, in the aluminum industry, we have a small industry in Montana, but if you were to figure mining aluminum, treating it, processing it, the calculations show it would take 910 megawatts for every 100,000 tons of product. The reason why that's interesting, and you may understand, under the current mining processing and production systems you use many forms of energy, and this is the first time that really any research effort ever tried to convert the use of all forms of energy into kilowatts and megawatts, but just for instance, I mentioned the word, anorthosite, in my statement. Anorthosite could be used for aluminum ore. Some day we may have to use it. I ran a calculation of my own as an extrapolation from the Bureau of Mines figures and I come up with almost 1400 megawatts per 100,000 tons if we have to make it out of solid rock.

MR. SHENKER: That must be aluminimum still?

A Yes, we're still on aluminum, if we're still talking about the Stillwater complex, which I'm not afraid to talk about.

MR. SHENKER: Afraid to talk about it? Is there some reason you should be afraid to talk about it?

A No, I just thought I'd like to bring it out.

MR. SHENKER: Speak without fear, Mr. Groff.

A Well, thank you, I will. This is a tremendously large mineral deposit. It contains a number of strategic minerals, for instance, chromium. Some years ago, chromium was sold in New York Harbor for $40.00 a ton. Now that price runs from near $50.00 for the lower grades and as high as $135.00. The Stillwater complex contains 90% of the chromium on the North American continent, so likely, it might be mined. That's why I mentioned it in my paper, and just how many megawatts would we use? Because it's a sort of indirect thing, you have to take the megawatts that you're going to use in making ferrochrome and the megawatts you use in making iron and put them altogether, and this is basically the reasoning that I used in coming up with the 1,000 megawatts. Also, I might point out that in the state of Montana, we have a vast resource of titanium ore up off the Rocky Mountain Front, in the Augusta, Choteau, Bynum area. Titanium, by calculations, is one of the most difficult elements to separate from its ore. It requires something like 1521 megawatts per 100,000 tons. I thought these figures would be interesting, because basically, if the nation ever gets in a position where they're going to need this stuff, it's going to take a lot of energy.

MR. SHENKER: Does that conclude the material you wanted to supplement the record with?

WITNESS: That's correct, sir.

Continuation of Cross, by Department of Natural Resources and Conservation

By Mr. Shenker(Continuing):

Q Now, Mr. Groff, what you have put in your statement as a projection for energy needs in the mining industry, the mineral industry, and the figures which you have also read to us just a moment ago, are the kinds of information which the utility industry, of course would have to take into consideration when they make their load projections, isn't that right?

A I would presume that is correct.

Q And anyone who is hired as an independent consultant for the utility industry would have to take the same kinds of information into consideration as they would projects loads and forecasts, wouldn't they?

A I presume so.

Q Has anyone from the Montana Power Company ever contacted you to see what the likely growth in the mineral industry would be?

A Actually, I think I can answer that, no. The power company and I -- really, I'm sure they're interested in our data, but I think one thing we must remember here is that the data that's being generated in this particular area is coming out very, very recently, and they also have the source of the United States Bureau of Mines, so they really don't have to come to me.

Q Well, your data would be the most up to date data for Montana, wouldn't it?

A Well, we would still have to take the United States Bureau of Mines data and extrapolate it into the Montana situation.

Q In your statement, sir, you state your view that electricity is a key factor in moving from a recession to relative prosperity. One of the items that you mention is jobs associated with the construction of units 3 and 4 and the transmission line. Do you know how many jobs that's going to mean, Mr. Groff?

A That isn't my bag. I don't know. I know it will mean jobs.

Q Do you know whether any of the alternatives to Colstrip units 3 and 4 would generate jobs?

A I have no answer to that. I presume they will, too.

Q You don't have any comparative evaluation on that?

A I haven't a comparative evaluation, no. That's up to someone else. That isn't my area. Of course, what we're getting at here is jobs, but I think the most important thing is -- it isn't the jobs associated with construction; it's the jobs that are going to be there after the power is available.

Q You make a point of urging that the nation as a whole have a well-planned and balanced economy as the keystone of prosperity. You would agree, would you not, as well, utility industries should have a well-planned and balanced resource base as the keystone for their flourishing?

A Well, you're asking me a question there. I presume that is correct; however, I'm not an expert in that area.

Q In the letter that you sent to Dr. Albert Tsao, Administrator of the Energy Planning Division of the Department of Natural Resources and Conservation, you stated on the third page of that letter, sir, there was every reason to believe that scientists and engineers can solve the problems, which were, generally speaking, discussed in your letter, provided that they are given the incentive, the time, and the financing?

A Absolutely.

Q You strongly adhere to that view, don't you, Mr. Groff?

A I do.

Q And you'd be in favor of doing everything that we can to be given the incentive, the time, and the financing, to solve those problems, wouldn't you?

A That's true.

MR. SHENKER: Thank you, sir, nothing further. Oh, I'm sorry, I do have a couple more questions I wanted to ask you, Mr. Groff, because your department --

WITNESS: You know, I'm really enjoying this.

MR. SHENKER: Oh, then, I wouldn't want to break it off quite so soon.

WITNESS: You know, time is relative, isn't it? I'm not supposed to be asking you questions, but --

MR. SHENKER: I'll answer that one. Yes, time is relative. Time is a relative concept.

A When I said here, given the incentive, time and the financing, what I'm trying to say, we scientists and engineers, if you will do that for us, we can solve all these problems, but also, there's a time factor that's very darned important, which means we'd better get moving before it's too late.

Q We don't want to reach the situation that you mentioned with the question that you asked at the end of the introductory statement that you made orally. We don't want to reach the situation ten years from now, either, of wondering whether we've passed the point of no return?

A I don't think we will wonder about it then. I think we may already have passed it.

Q Well, on that subject of the point of no return, I was interested in the study which your department had commissioned from the Cameron Engineers in Denver, and in that particular study, you noted, I assume, the analysis that in order for the Colstrip units to fit into the planned resources of the Northwest Power Pool, they would have to be available for service by July 1978 and July 1979. You wouldn't have any reason to disagree with the study on that, would you, sir?

A Well, I don't disagree with it, but obviously, we're in a new time frame.

Q You don't think we may have passed the point of no return?

A Well, let's say maybe -- I don't know.

Q There were a couple of other points in that same study which I think bear upon the general information that you brought to us at the hearing, sir. In that study, one of the alternative forms of the delivery of energy was discussed and that was, of course, gasification from coal. You would agree, would you not, Mr. Groff, with that judgment there, that gasification -- on the subject of gasification, "the dwindling reserves of domestic natural gas leave coal as perhaps the most dependable future source of pipeline quality gas." You would agree with that, wouldn't you?

A I agree, but I'd have to qualify that agreement.

Q Okay.

A I would like to advise you that amongst all my other jobs, and I work about a hundred hours a week, I serve on the Technical Advisory Committee of the Fossil Fuels Division of ERDA. I also work with the Federal Power Commission. Gasification is a wonderful thing, and we're going to have to use it, but at present, we only have two old German-moded systems to use, and before ERDA can bring these new things on line, 15 years will have passed. Now, I agree that we've got to have gasification but I am saying we may not be able to wait for it. We'd better utilize every form of energy we can get our hands on now.

Q And if we don't have to wait 15 years, we shouldn't wait that long either, should we?

A I agree, if we don't have to, but unfortunately the lead time and the development problems are enormous.

Q By the way, just to make sure that I'm clear on the record, Mr. Groff, your testimony here today is on behalf of yourself personally, or on behalf of the Montana Bureau of Mines and Geology.

A It's on behalf of the Montana Bureau of Mines and Geology.

Q Did anybody other than you have to make that determination? Did you have to check that with anybody?

A I made that myself and I made a copy of this available to my people.

Q What does your people mean?

A Well, I have a number of professionals working for me.

Q Your staff, you mean?

A My staff. Sometimes they help me in these things to shape my opinions, and we're strongly in agreement that, yes, we're going to need all the energy we can get, and probably a great deal sooner than anybody realizes.

Q Now, Mr. Groff, the last thing I wanted to ask you about is also from that same Cameron study, and that was on the subject of the rail haul of the coal, which is a need or use that should be maximized, as I understand the report, as soon as possible, too. That would be consistent with your other views, would it not?

A Yes.

Q In the report, the statement is made that"rail transportation capacity should not be a factor limiting Montana's ultimate coal production. Several times the present amount of Montana coal shipments could be hauled on existing lines by increasing the number of cars and traction units;with additional centralized traffic control more than ten times present production could be hauled. Beyond this, the railroads will simply install the additional equipment and roadway necessary to move whatever quantity of coal they can be assured will continue to be required." You have no reason to disagree with that, do you, sir?

A To a certain extent, yes.

Q Good. Tell me what your disagreement is with the Cameron study.

A My point on that is, we can use the existing railroads. We don't have to build a lot of hopper cars, but in some total amount of what this nation is going to need within ten years, that will not be sufficient. We're going to have to move energy by rail, by cable, by power line and by --

Q Pipeline?

A Pipeline.

Q Barge?

A Possibly.

MR. SHENKER: I have nothing further. Thank you very much, Mr. Groff.

HEARINGS EXAMINER: Thank you very much, Mr. Groff. Your testimony will be entered into evidence in the proceeding.

(WITNESS EXCUSED.)

HEARINGS EXAMINER: Mr. Sherburne.

H. M. SHERBURNE, appearing as a public witness, having been first duly sworn upon his oath, both as to his written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF H. M. SHERBURNE WAS DIRECTED TO BE INSERTED AT THIS POINT.)

STATEMENT- Favoring Construction of Colstrip Units 3 and 4 and the Transmission Line.

A presentation to the Board of Natural Resources by H. M. Sherburne, President of the Montana Mining Association.

Mr. Hearing Chairman, Members of the Board, Ladies and Gentlemen.

As President of the Montana Mining Association, a trade association with over 600 members, I appear here today in support of the construction of Colstrip Units 3 and 4 and the tranmission line.

The Montana Mining Association wishes to endorse the statement given here by Dr. Sid Groff. For nearly sixty years, people involved in every phase of the Montana mineral industry have relied with confidence upon the estimates, the knowledge, and the sound judgement of the Montana Bureau of Mines and Geology. During no period has this been more true than during the years this agency has been under the direction of Dr. Groff. The expertise and general excellence of Dr. Groff and his staff are recognized by all, particularly with regard to the vast body of information they have developed regarding Montana's coal resources.

We feel that because of the highly emotional aspects of the problems now under consideration by this board an impartial and level-headed view is needed. Dr. Groff provides us with that view.

The Montana Mining Association is already on record as favoring this project. Of course, we regard the natural resources involved as Montana's own, but in a larger sense we also regard them as our Nation's resources. This ownership of ours carries with it responsibilities which reach far beyond our borders. We wish to call to your attention one of the precedents for the development of one state's resources for the benefit not only of that state but also of the entire Nation. The state of Minnesota contains the renown Mesabi Range iron ore deposits and has produced nearly 68% of the total U..S. iron ore....ore needed for our efforts in five wars and which permitted the United States to build a steel industry second to none. While Minnesota taxed the production of iron ore and directed some of the earliest environmental controls toward the iron ore operations, it, nevertheless, provided a climate in which this industry could flourish.

We agree that industrial development in our state will use the projected output from Colstrip Units 3 and 4. However, the continued prosperity of our Nation is of paramount importance and depends to a large degree upon an adequate supply of energy. Whenever circumstances demand, we feel that the exportation of a portion of our electerical energy and our coal to less fortunate states is proper and in the national interest.

The association I represent recognizes the size and complexity of the issues now before this board. However, in our view the reasons favoring construction of these plants do outweigh those opposing construction. We, therefore, recommend that these plants be built.

HEARINGS EXAMINER: Do you have anything to add to your statement?

WITNESS: No.

HEARINGS EXAMINER: Very well, the DNR may cross-examine.

EXAMINATION OF H. M. SHERBURNE

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q Mr. Sherburne, I just had a chance with Mr. Groff to chat about what I call the fanmail of your statement. You say some very nice things about Mr. Groff in your statement, including the fact that you rely with confidence on the estimates, the knowledge, and the sound judgment of the Montana Bureau of Mines and Geology. I assume what you mean by that, Mr. Sherburne, is within the areas of their particular competence, you rely upon their judgment?

A Yes, this is right.

Q And similarly, when you say the expertise and general excellence of Mr. Groff and his staff are recognized by all, that may be a slightly excessive statement. Again, you mean within the areas of their competence?

A Within the mineral industry.

Q And you believe that an impartial, level-headed view is one that is needed, and in view of the strong confidence you impose in Dr. Groff, you would certainly think that he would be impartial and level-headed about almost everything, wouldn't you?

A Again, within the areas that we're referring to.

Q In your statement, when you're finished talking about Mr. Groff -- there are four paragraphs in the statement, and in the third paragraph, you state: "Whenever circumstances demand, we feel that the exportation of a portion of our electrical energy and our coal to less fortunate states is proper and in the national interest." Did you know, Mr. Sherburne, that Montana is now a net exporter of energy?

A A net exporter?

Q Yes.

A Yes, I was aware that we are.

Q And that's proper as far as you are concerned, isn't it?

A I'm satisfied that it is.

Q You also point out that the association which you represent has recognized the size and complexity of the issues before the Board, which leads me to conclude that you are here in behalf of the association itself, rather than in your personal capacity?

A I represent the association here, yes.

Q I take it that the association had to make a decision of some kind to authorize you to come here. Was that in a formal way, or was that just sort of informal?

A It was in a formal manner -- oh, something over a year ago, when we originally endorsed the project, before I became President of the association. This was the time that we went on record.

Q Was the formal decision of the association the result of discussion, motion, and that kind of a formal structure?

A Yes. We have a Board of Directors which meets periodically.

Q So the Board of Directors had a discussion on what the complex size, the issues were, and then they made their decision?

A Yes, this has been hashed over at some length.

Q And of course, you have to make that decision based upon the pros and the cons, and you say that, in the next to the last sentence in your statement. You say you looked at the reasons favoring construction and those opposing construction. Can you tell me what the reasons are that oppose construction that were discussed by your board?

A Yes, primarily, simply the matter of the mining of the coal itself; in other words, the using of the land for this purpose.

Q Those were reasons that opposed construction?

A These were discussed as reasons that oppose construction, yes.

Q Any other reasons that opposed construction that were considered by the board?

A The board was primarily interested and concerned itself with what they considered to be -- oh, perhaps misconceptions on the part of the general public as to the quantity of land which was going to be used. The bulk of our membership are private citizens, small miners, prospectors, people like this. One of the common misconceptions which they run into is that all of eastern Montana is going to be dug up and turned into a mud hole, this sort of thing. It seems to be a common public misconception, and in truth, this is not going to be the case. I believe Mr. Groff's estimate runs -- I think his statement includes a figure of something like one-half of 1% of the land area of the state east of Billings, and that isn't exactly the same thing as digging up all of eastern Montana. He talks in terms of a figure of five townships over the next, perhaps, 45 years or some such thing.

Q Are you still telling me about reasons that oppose construction?

A I'm referring to the -- the board was not opposed to construction.

Q I understand that.

A But these are the -- it's this misconception that we dealt with, as I recall, at some length; in other words, they do not feel that these are adequate reasons. I suppose if we all had our druthers, we'd "druther" not dig up anything, but we're driven to it by necessity.

Q Did the board have a discussion on, or consider what the likely projections of available energy would be, based upon resources that have been planned and loads that have been projected?

A Not specifically, sir.

Q Did the board have available to them comparative environmental analyses?

A They were not read at the meeting.

Q Did the board have available to it, alternative sources for the development of energy?

A For instance, did they discuss gas, things like this?

Q Or coal as a source of energy in some other place or some other form?

A Yes, the mining of coal to be shipped out of the state, as opposed to burning it here and converting it. Yes, it was discussed.

Q All right, that would be one of the reasons to oppose construction, wouldn't it?

A Not in their view.

Q It would be a reason to oppose, but all the reasons put together that oppose construction, were not good enough to outweigh the reasons that were in favor of construction, as far as your board was concerned?

A This is correct.

Q I'm just trying to find out what these reasons were that the board considered. Were there any specific alternatives that were considered by the board to the location of two 700-megawatt generating units from the Colstrip coal at mine-mouth?

A No.

MR. SHENKER: I have nothing further. Thank you very much, Mr. Sherburne.

HEARINGS EXAMINER: Thank you very much, sir.

(WITNESS EXCUSED.)

HEARINGS EXAMINER: Mr. Johnson, of Mountain Supply, is here.

M. E. JOHNSON, appearing as a public witness, having been first duly sworn upon his oath, both as to his written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF M. E. JOHNSON WAS DIRECTED TO BE INSERTED AT THIS POINT.)

MOUNTAIN SUPPLY CO.

ROUTE 2, MULLAN ROAD
MISSOULA, MONTANA 59801

PHONE 543-8255

210 EAST GRIFFIN DRIVE
BOZEMAN, MONTANA 59715

PHONE 586-2032

February 6, 1976

RECEIVED
FEB [illegible] 1976
[illegible] NATURAL
[illegible]VATION

Montana Department of Natural
   Resources and Conservation
Natural Resources Building
32 South Ewing
Helena, MT 59601

Re: Public Hearing, Colstrip 3 & 4

To the Board:

I would like to make the following comments in support of Colstrip 3 and 4 generating units.

Since 1960 Mountain Supply Co., headquartered in Missoula, has been engineering and installing irrigation equipment in the western half of Montana. Some projects involve only water transmission lines, others are gravity sprinkler systems that require no man-generated power, and the remainder are powered by electrical or motor-driven pumping plants. I have compiled information on all electrically powered irrigation systems installed by Mountain Supply Co. in the last five years.

The total electrical horsepower of pumps installed during this period was approximately 11,200. The largest single pump was 200 hp and the average total horsepower per sprinkler system installed was between 30 and 40. This equipment was installed on 224 separate farms and ranches. The average sprinkler irrigation system with a proper watering interval requires 1/4 to 1/3 hp per acre, depending on application rate and elevation above the water source, so between 34,000 and 45,000 acres of land were involved.

Sprinkler irrigation properly designed and operated takes about 60 percent less water and produces 30 to 40 percent more crop yield for a given acreage than does flood irrigation. When dry wasteland is converted to sprinkler

Irrigation Systems - Pipe - Plumbing Fixtures
Pumps - Water Well Supplies
"Water Is Our Business"

irrigation, yields often increase by 100 percent.

Montana has many acres of unproductive land that will eventually be evaluated for water systems to increase agricultural income. This potentially valuable cropland will be developed at a rate which depends in part upon the general market conditions for agricultural products, but it will certainly be developed at some time.

Most of us in Montana realize that agriculture is our state's largest business. The people in Montana agriculture know that they have very little control over prices they receive for their products. Those who live in areas that have available water and a source of energy to apply that water can increase agricultural yields and incomes, and the incomes of local businesses.

Electrically operated pumping plants have uses other than the direct application of water to cropland. They are often used to pump waste water from flood irrigated fields back to canals for redistribution. Ditches and canals that transport water can frequently be shortened or eliminated by pumping water. Many of these canals and ditches are very inefficient, costly to maintain and wasteful of water.

Water pumping equipment can also serve agriculture by moving surplus water into holding reservoirs for future use. Waste and floodstage water otherwise becomes a lost resource to Montana in many areas.

I have been associated with many of the problems of Montana agriculture for the past 26 years and feel that water is one resource that can be best utilized by agriculture in Montana. A reliable and sufficient supply of electrical energy can play an important part in that utilization.

Sincerely,

M E Johnson

M. E. Johnson, President

EXAMINATION OF M. E. JOHNSON

Cross, by Department of Natural Resources and Conservation

By Mr. MacIntyre:

Q Mr. Johnson, you represent Mountain Supply Company?

A Yes.

Q And are they in the business of selling sprinkler systems?

A Yes.

Q I take it, the more availability there is of electricity, the easier it is to sell a system?

A It's a very definite advantage, yes.

Q Have you talked to anyone from either the Montana Power Company or any of the applicants prior to making your statement here?

A No, I haven't.

Q Have you had occasion to read either the Department of Natural Resources Environmental Impact Statement on this or the Westinghouse Environmental Impact Statement?

A No, I haven't.

Q Have you seen any exhibits that have been tendered in this hearing for review before making this statement?

A No, sir.

Q Do you have any reason to believe that the power that will be generated at units 3 and 4 will be used in the state of Montana?

A In the very near future, some of it will have to be, yes, sir.

Q Is this your opinion, or do you have a source of information?

A Well, I should say that the best example you could have would be -- approximately three years ago this summer, the river flow in the Northwest was running low. We had a great deal of trouble with pumps running in the western half of Montana, pumps cutting out under peak load conditions per day, and that power normally would be sent back to us by Bonneville Power Administration, and that year, Bonneville Power Administration could not feed us any power, and right in the middle of summer, a coal-fired unit went down, down to Billings, and Montana Power Company couldn't boost the system. I think there are peak load conditions that our power is coming closer to being short than we realize.

Q So you're mainly interested in just getting the power? You don't care where the source is?

A Well, it's a cost factor. I really don't believe that anybody can afford to -- it's been said here once today, I don't believe you can afford to railroad coal out and ship power back. I don't think this is economically possible.

Q Have you made a study on that?

A No.

Q This is what you've heard?

A I've heard it here today in testimony, yes.

Q If the power were available without units 3 and 4, would you still be in favor of 3 and 4?

A There would be no need for them if the power were available.

Q Water is important to the agricultural economy of Montana, is it not?

A Very definitely.

Q Do you think it would also be very important to industrialization in the state of Montana?

A Very definitely.

Q Do you know how much water will be used at Colstrip 3 and 4 for generating purposes?

A No, I don't, sir.

Q I take it, then, it's your testimony that you're in favor of a generating complex that will supply the power needed for you?

A Well, I think the future of the irrigation land in Montana depends on electrical power, and we're just commencing a development of irrigation in Montana. We're in the same stage that the state of Washington and the state of Oregon and the state of Idaho were, oh, ten years back. We're just commencing here to develop pumping plants and to get water on the land. I think that 10, 15, 20 years down the road, you'll see a great deal of difference in Montana.

Q Is it a fair statement, then, to say that your testimony is that sprinkler irrigation is important to the agricultural economy of Montana and that electricity is important, and that you want to have a source for that electricity, no matter where it is?

A At a figure that makes it economically possible to apply it to agricultural land.

MR. MacINTYRE: Thank you. I have no further questions.

HEARINGS EXAMINER: Thank you, Mr. Johnson. Your testimony will be in evidence in these proceedings.

(WITNESS EXCUSED.)

HEARINGS EXAMINER: Gentlemen, we have another public witness here, Mr. Siring. Mr. Siring.

ROD SIRING, appearing as a public witness, having been first duly sworn upon his oath, both as to his written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF ROD SIRING WAS DIRECTED TO BE INSERTED AT THIS POINT.)

My name is Rod Siring. I am Manager of the Park Electric Cooperative, Inc., of Livingston, Montana.

I am appearing on behalf of the Park Electric Cooperative's members to add our support for the construction of Colstrip units #3, and #4.

For the first time in many years, the movement of people was from the city to rural areas by some 3%. I think we will see this trend continuing in the future. With this movement the demands for electric energy will be more critical than they are at present.

We, in Montana, are very fortunate to live in a state where we have clean air to breathe; and we can see the clear blue sky, most of the time. I do not feel that we can bury our heads, and say that we are going to hold, or stop, development because this is not the American way. Montana is going to grow, and it is our job to prepare for this growth, and to maintain the ecology of our fine State.

Park Electric's members, in the last seven years, have more than doubled in usage of electricity. We foresee the usage doubling at a faster pace, as other forms of energy sky rocket in price and availability.

Park Electric purchases their wholesale power from two sources: The Bureau of Reclamation, and The Montana Power Company. The Bureau of Reclamation provides 58 percent, and The Montana Power Company 42 percent.

The Bureau of Reclamation has guaranteed delivery thru October 1977. After 1977 each Cooperative will be required to purchase their needs above the determined contract demands of each Cooperative. The additional power will have to be generated somewhere, to provide for the continued load growth that will come.

Agriculture is the leading industry in Montana, and this is partially due to agriculture's dependence on electrical energy, and they have just started to make full use of it, as in the use of Pump Irrigation, and crop drying.

The estimates that we are making, at this time, as to the needs of our consumers, indicate to us the vital need for additional generating facilities in our State in the 10 years to come.

Park Electric Cooperative is one of the smaller Cooperatives in Montana, but we are one of the top five in growth over the past 5 years.

In the years 1973, 74, and 75, we had 286 KW, 650 KW, and 945 KW of electric heat installed in new homes, and we have really no idea as to the conversion that has taken place this last year. We did not have a new home built, on our project, in the last two years that was not an all electric home. I feel this trend will continue, and the additional power has to come from somewhere, why not Unit #3, or #4?

I would like to present the following information on the load growth of the Park Electric:

1970 - 1975 our load growth is as follows:

Rural Residential	13%
Seasonal Residential	70%
Town Residential	268%
Irrigation	544%
Small Commercial	41%
Public Buildings	19%
Total growth in all categories	65%
Growth in consumers	26%

As you can see by the above figures, which can be verified by our monthly operating reports, electricity is the driving force in our agriculture and our rural areas of Montana.

EXAMINATION OF ROD SIRING

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q Mr. Siring, what is the total load of the Park Electric Cooperative?

A The total load?

Q Yes, sir.

A 25,000,000 kilowatt hours is our sales.

Q 25,000,000 kilowatt hours per year?

A Yes.

Q In order to determine what that is in kilowatts, you have to divide by 8,760. Have you done that for us? Take the total number of hours in a year and you divide that into the total number of kilowatt hours, and it gives you kilowatts.

A No, sir, I haven't.

Q You don't know what that is?

A I just saw that figure, but it leaves me at this time.

Q Your statement tells us that yours is one of the smaller electric cooperatives in the state of Montana. Were you giving us a peak sale?

A No, this is our annual sales from 1975.

Q So that would tell us what your total actual sales were? It wouldn't give us the average energy, would it?

A Per consumer?

Q No, for your entire cooperative?

A Over what period?

Q Over a year. You haven't averaged those figures out. That's what your total sales are?

A If you were just going to average, it would be something over 2,000,000 kilowatt hours per month.

Q So on an average basis, we could divide the number of hours in a month into the figure you just gave us, and you haven't done that, either?

A Well, I can give you the peak months of '75, which was January, and it was 5840 kw's, which was our peak in kilowatts.

Q 5,840 kilowatts or 5.8 megawatts?

A All right.

Q Is that right?

A Okay.

Q Have you chatted with anyone on behalf of the other cooperatives or the cooperative association before coming here to testify?

A Yes, sir, there have been numerous meetings concerning this proposition.

Q The association urged the individual members to come here to testify in support of the association's views?

A Yes, our association plans testimony; also, our generation and transmission cooperative. I believe you'll hear them Tuesday of next week.

Q Have you participated in any meeting with other cooperatives at which representatives of the Montana Power Company were present?

A Well, sir, I participated in an engineering study here three years ago with the power company concerning the needs of central Montana G and T and the deliveries we get from the Montana Power Company.

Q Have you had any contact with the folks at Montana Power Company, who are one of your two suppliers of power, on the subject of your testimony here?

A No, sir.

Q You haven't discussed with them your load projections?

A They asked if I would make a presentation.

Q Who made that request on behalf of Montana Power?

A The District Manager, Howard VanNoy; however, this had been discussed previously, at our G and T meeting in February, that we were going to make this testimony.

Q February of last year?

A This year.

Q You have known that for some time, haven't you, sir?

A Yes, sir.

Q You knew that was the request of the power company, too, didn't you?

A That they would like to have us testify?

Q Sure.

A I'm sure.

Q You make the interesting observation in your prepared testimony, Mr. Siring, that you believe the trend of movement away from urban areas to rural areas will continue?

A I believe so.

Q There were some folks in here, I think it was yesterday or the day before, who had a different point of view, but we can't always agree on everything, I guess. You knew that Montana was a net exporter of energy, did you not?

A Yes, sir.

Q That's okay with you, isn't it?

A As long as our needs are sufficiently filled.

Q You're in the same situation with the rest of the cooperatives in Montana as far as the Bureau of Reclamation delivery of power is concerned. They are under contract to continue to serve you as to the needs that you will have through 1977?

A That's right.

Q Thereafter, they will continue to serve you at those needs, but if you have greater needs, they are not obliged to serve the greater needs?

A That's right.

Q So whatever the increment is, is what you would have to find a source for power on?

A Right.

Q Have you investigated sources of power other than the Montana Power Company?

A Well, sir, the other suppliers available to the rural electrics of Montana, of course, is Bonneville, and Bonneville does not serve east of the Continental Divide, so this creates a problem for us cooperatives that are in the eastern part of Montana. We have an organization we belong to in North Dakota called Basin Electric Cooperative; however, they serve east of the ties and the transfer of power, so far, hasn't been able to be ever worked out to get across the east-west ties, and at the present time, they have all their capacity fully committed, so the way things stand right at the present, anyway, our dependence on supplemental power will have to come from either the Bonneville power area or the Montana Power

Company, and if I'm correct, I think I saw something just the other day, where Bonneville has been completely committed to the consumers that they have now, so I believe our situation is back to the power company.

Q Well, based on that understanding as far as you have it, Mr. Siring, would I take it, then, that you are not contemplating the exploration of any other sources of power?

A Yes, sir, we're looking at anything that's available to us. There has been talk of gasification plants and things like this and up in the Shelby area, we've looked into some of these things, but so far, the lead time needed to produce this supplemental energy is almost past. I mean, we'd be too late to serve the needs that we'll have.

Q Have you chatted with the folks at Great Basin about the possibility of your coming into distribution from them as a result of the new 1500 megawatts of power that they're going to be generating in Wyoming?

A In Wheatland?

Q Yes.

A Well, I understand that they will be west of the ties; however, we have a transmission problem, and most definitely, we have representation on that board.

Q As you look at the long-range future, Mr. Siring, you believe, do you not, that you're going to have to have some additional transmission into your system in order to broaden the base of the power sources which will be delivered to you?

A Do you want to run that one back again?

Q As you look at the long-range future, you're going to have to have increased transmission into your system in order to broaden the base of power sources which will be available to you?

A I think it would be better said that we need transmission line into the area of Montana rather than my particular area. I have a very good situation where I sit right underneath the two major transmission lines coming from Billings.

Q You're in one of the better situations?

A I'm in a little better situation than some of the other cooperatives.

Q There are some cooperatives in eastern Montana that are undertransmitted these days, right?

A Well, having access to transmission lines, yes.

MR. SHENKER: Thank you very much for coming in, Mr. Siring.

HEARINGS EXAMINER: Thank you, sir. Your testimony will be received in evidence here.

(WITNESS EXCUSED.)

HEARINGS EXAMINER: Let's recess until 1:30

(HEARING RECESSED AT 1:30 P.M.)

The hearing was reconvened at 1:30 P.M., following the lunch recess.

NEIL H. WOODLEY, previously called as a witness by the Applicants, and previously sworn upon his oath, resumed the witness stand for the continuation of his examination and testimony.

HEARINGS EXAMINER: Re-cross examination of Mr. Woodley.

MR. BELLINGHAM: Sir, I do have two more questions, if I might.

HEARINGS EXAMINER: Very well.

Redirect, by Applicants

By Mr. Bellingham (continuing):

Q Mr. Woodley, do you know of any other coal alternative to your company at this time that you have not previously testified to?

A Yes, my testimony up to this point has been restricted to what I would call on-shore sources, and since we are on the coast, we also are interested in looking at off-shore sources. At the present time, the company is engaged in an exploration program in the state of Alaska, and we expect the completion of that exploration program to demonstrate that indeed, PGE will have a very substantial coal resource available for water transport to our plant.

Q Insofar as the Alaska coal situation is concerned, have preliminary tests been made relative to the sulfur content of that coal?

A Yes, they have.

Q Let's go back a bit. When did you first get into the Alaska coal situation that you've testified to?

MR. SHENKER: That's the fifth of the last two questions.

A In 1974.

MR. BELLINGHAM: Thank you, Mr. Shenker. When I am finished with his questions, would you keep a list so that I can have the total?

MR. SHENKER: That will be one of the more useful things I could do with my time. Yes.

MR. BELLINGHAM: I hope that's on the record.

Q When did you first become interested in Alaska coal?

A At the same time that we were looking for potential sources for the Boardman plant.

Q And what year was that?

A 1974.

Q Do you have any number of acres tied up there under lease or options or otherwise?

A We presently have prospecting permits or exploration permits from the state of Alaska on 46,000 acres.

Q And those acres are located in Alaska, is that right?

A That's correct.

Q Following your obtaining these permits, was there any kind of an exploration program undertaken?

A Yes, that program is now in its second year.

Q And what has been the substance of the program to date?

A Well, to date we have done some exploratory drilling and we have done extensive geophysical work.

Q Now, to get back to the sulfur content, what are the results to date?

A The results to date show that the range of sulfur is somewhere in the neighborhood of one-tenth of 1%.

Q Have there been any reserves established?

A We've not defined in great detail the reserve, but on the basis of the geophysical work, we believe there are several hundred million tons.

Q If this coal were to be utilized by your company or others in the Pacific Northwest, what mode of transportation would be used?

A Water.

Q What do you mean by that?

A It would be brought down either in ocean-going barges or ships from Alaska to ports either on the Columbia River or on the coast.

Q Do you know anything about the shipment costs? Has there been any analysis made?

A The analyses that have been made to date indicate that the costs of shipment will be within a range to justify the whole exploration program which is now underway, so suffice it to say that they are going to be very competitive with Rocky Mountain coals delivered by rail.

Q I take it that you have not finished your exploration completely, is that right?

A That's correct.

Q There has been no final decision on whether or not to mine this coal?

A That's right. The definition of the minable deposit, the final determination of mining costs, will be made at the completion of the exploration program this year.

Q Assuming that at the completion of the exploration program that you have testified to, the decision is to go ahead and mine that coal, when do you think that coal might be available for use?

A My best estimate at this point would be in the mid-1980's.

Q Have you had any other companies express an interest in the possibilities of this coal?

A Yes, we have. All of the northwest companies and companies on the west coast, in general, down as far as southern California, and also, the Hawaian Electric Company, and other companies that are foreign.

Q Well, assuming that the coal is mined as a result of a decision by your company, do you foresee its use in the state of Oregon for generation purposes?

MR. SHENKER: If you'd like to have a running count, Bill, it's 22 now.

A Very definitely.

MR. BELLINGHAM: Stop me when I get to 27, will you?

MR. SHENKER: That's 23.

MR. BELLINGHAM: No, that wasn't a question.

MR. SHENKER: You said, will you.

MR. BELLINGHAM: No, it was a command; it was peremptory. I said, stop me when I get to 27.

MR. SHENKER: But then you said, will you? How do you make a peremptory will you?

Q Why do you foresee a use in the state of Oregon?

A As I stated previously, the access to water delivery is one reason. The low sulfur content is another reason, and I have not mentioned the Btu content, but it's in the range of 9,000.

It's a very good coal, and it's a coal which we will own.

Q Do you foresee a use of this coal for generation purposes in the state of Washington?

A I think that's a very strong likelihood. If the mine is developed, it will be developed to a very large capacity, and companies in the state of Washington will be looking at this potential resource. As I testified previously on the question regarding the use of Colstrip coal in Washington, I should, perhaps, in the context of this question, clarify the point that the accessability of the Alaskan coal reserve, being of better quality, and using a competitive form of transport, will undoubtedly diminish the attractiveness of the Colstrip coal because, of course, it has a much higher sulfur content, ten times the sulfur content of the Alaskan coal, and is subject -- would be subject to the non-competitive rail rate setting that I mentioned earlier this morning.

Q You're talking about Colstrip coal in connection with rail?

A That's correct.

Q What about the possibility of the use of this coal in Idaho?

A The Alaskan coal would benefit Idaho most directly in that Idaho is now a partner -- Idaho Power Company is now a partner in the Boardman project. This coal will most definitely be used at the Boardman project; energy generated at that project will, of course, be marketed to Idaho Power, in accordance with the ownership agreement.

Q I think you touched on it, but as far as Colstrip coal, by the same token, what would be the possible effect of the use of Alaskan coal upon the future use of other Montana coal in the

Pacific Northwest?

MR. SHENKER: Stop! You asked me to stop you at 27.

MR. BELLINGHAM: That's the last question, incidentally, assuming I get a favorable response.

HEARINGS EXAMINER: You may answer the question.

WITNESS: Could you repeat the question again, please?

Q Now you're getting me up to No. 28. You previously testified relative to the possible effect of Alaskan coal on the use of Colstrip coal in the Pacific Northwest. I would now like to direct the same question to you as applied to other Montana coal being used for generation purposes in the Northwest.

A I have not made a detailed study of utilization of the Montana coal in the states of the Northwest, areas of the Northwest, other than Oregon. Speaking for the Northwest in general, I can say that the Alaskan coal reserve will be a better quality and will be receivable by a transport form other than rail. Historically, the water transportation escalation and pricing has been far more favorable than rail, so with those two major factors and a higher heat content, I would imagine that the Alaskan resource will be an extremely attractive coal resource to the Pacific Northwest. Speaking to Oregon particularly, there we are also exposed, from the Montana coal standpoint, to the two-line haul, which works an additional transportation disadvantage for Oregon, and we think the Alaskan coal reserve has a great deal of promise, and that is why we are pursuing it most diligently.

MR. BELLINGHAM: No further questions.

HEARINGS EXAMINER: Mr. Shenker.

Re-cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q DNR Exhibit No. 28, the agreement of January 23, 1976, among the four non-Montana-based applicants for this present proceeding, Mr. Woodley, was the basis for a motion filed in your Pebble Springs nuclear regulatory proceeding, is it not?

A Yes, I believe you're right.

Q Yes, and that motion asked that that proceeding be reopened because your need forecasts had been completely changed, isn't that the basis for the motion?

A I think that's the intent of it. I'm not sure that that's the exact wording of the motion.

Q What position has the staff of the Nuclear Regulatory Commission taken with respect to that motion?

A I really don't know what position they've taken. The last I knew, it was under consideration.

Q The Commission itself, of course, is the one that has it under consideration?

A That's correct. Did you say the staff?

Q Yes, sir.

A The NRC staff supports that motion.

Q On your statement --

A The NRC staff supports a number of things, but it's the Commission, as you know and have stated, that ultimately makes the decision.

Q Yes, we know what the staff does, and know what your opinion of it is, I think.

A I doubt that you do.

Q At any rate, in your testimony, Mr. Woodley, on page 3, Mr. Bellingham was asking you about the study which was the one submitted to the Nuclear Regulatory Commission, whose hearings are still going on for Pebble Springs, and he asked you about your comment as to a similar study today, if it would show whatever it would show as to costs of the comparative operations. Do I correctly infer from the language, "would show," that you haven't made the study?

A Where are you referring to in the statement?

Q Page 3, line 7.

A You are correct. I have not made a similar study.

Q Why not?

A Because, as I testified earlier, I have learned a great deal about how railroads do business, how escalation formulas are calculated, and so today I would not make a study just showing a single year's costs. I would make a study that shows the levelized cost, making good rational assumptions on escalation, which would cover the entire life of the coal contract for the project. This study that was submitted was, as I stated earlier, for 1978 costs only, because I had no basis from which to project the fuel costs for the coal-fired alternative, so if I were to make another study like that, which I would really rather not do -- but if I did, it would show that the costs are a great deal higher for the rail delivery alternative than were shown in that study.

Q You don't yet have a certificate to build the Pebble Springs plant, do you?

A That is being contested in the Oregon courts, so we do not have a certificate signed by the Governor.

Q You also don't have a certificate from the Nuclear Regulatory Commission, do you?

A For Pebble Springs? That is correct.

Q You have a certificate for Boardman, don't you?

A That's correct.

Q When did you get that?

A The certificate for Boardman was signed by the Governor on March 24th of 1975.

Q As I understand the chronology, then, of the studies that you have done, Mr. Woodley, you, yourself, performed the studies in April of 1972 and then on six subsequent occasions that are shown in Exhibit 232, is that correct?

A That is correct.

Q In April of 1972, you did not yet have a certificate for Boardman?

A That's quite obvious.

Q And in April of 1972, you did a study that showed that of all the alternatives except a nuclear Pebble Springs plant at Carty, Boardman was the best way to go, frpm the standpoint of cost, right?

A That's what it shows.

Q In March of 1975, you got your certificate for Boardman and after that, but not before, you did a subsequent study in order to compare Boardman with Colstrip, for example, and then you show that Boardman is not as economically attractive as Colstrip, right?

A Correct.

Q Well, after you found that out, did you go back to the Oregon Siting Council and say, "Hey, fellows, we made a terrible mistake. It looks like Colstrip is a much better way to go. We'd rather put more of our marbles in that bag."

A Why would we do a thing like that?

Q I don't know, but did you?

A I would have no reason to.

Q Did you?

A Of course not.

Q There was substantial discussion with you and Mr. Bellingham on the subject of rail rates, when you sketched your knowledge moving from the naive to the sophisticated --

A I never inferred in anything I said that rail setting was sophisticated; if anything, it's the contrary.

Q We're just talking about your knowledge. You're sophisticated now, aren't you?

A Very much so.

Q Despite the fact that that puts me at a competitive disadvantage, I'll try anyway. Mr. Woodley, the tariff situation for rail rates, of course, are set other than by the individual declaration of the railroad, isn't that right?

A If you actually boil it down, I guess I'm just an Iowa country boy, and the illusion of sophistication is probably just that. The rail rates setting business is, as I stated before, rather unsophisticated and it's just a question of charging what the traffic will bear. I think I made that very clear this morning.

Q Are rail rates set by tariffs?

A No, rail rates are not set by tariffs.

Q Do rail tariffs have anything to do with rates?

A Rail rates appear as published tariffs.

Q I don't quite understand why that happens. Why are they published as tariffs? Is that just advertising for the railroads?

A Because we have a thing called the Interstate Commerce Commission that requires it.

Q Does the Interstate Commerce Commission have something to say about those tariffs that are filed?

A It approves them.

Q Does it have the right to disapprove them?

A It most certainly does.

Q Your point about the rail tariffs that would be charged for the shipment of any commodity sounds very much like what Mr. Bredemeier was telling us when he was here before, that negotitions are underway and rates are being discussed, and they range from high to low. That's as far as he was willing to go in detailed numbers, but that's essentially what you were saying too, isn't it?

A Well, I was a little more specific than that. I said that the rates that had been quoted by the Burlington Northern was $12.57 per ton to deliver coal from Gillette, Wyoming, to Boardman over the BN and the UP.

Q Now, don't fight the question, Mr. Woodley. Aren't you in general agreement with Mr. Bredemeier's statement that the rail rates are in negotiation and they range, in the negotiations, from low to high? You want low; they want high, right?

A That's the gist of it.

Q Okay, that's the way negotiations always are. What you told us this morning was that the rates that you will be charged in the last analysis will depend upon what the traffic will bear, and that, in turn, will depend upon what the railroad perceives to be your alternatives?

A That is very perceptive on your part; I agree. That's exactly what the situation is.

Q If you were closer, you would have patted my back, I'm sure.

A Yes, I would have.

MR. BELLINGHAM: We'll concede that you're quite sophisticated, Arden.

MR. SHENKER: Something about that concession doesn't ring with the sincerity that it should.

MR. BELLINGHAM: Do you want me to restate it?

MR. SHENKER: Well, if you'd quiver a little bit, it would help.

Q Now, Mr. Woodley, when you go into the negotiating room with the Burlington Northern --

A It's a traumatic experience.

Q Undoubtedly -- or Union Pacific, for that matter --

A More traumatic, because they know less about coal.

Q And a bigger room. Now, you'd like to be able to tell them, wouldn't you, "Fellows, this is a nice discussion, and we're kind of interested in having you to train shipment of coal to a load center generating station, but it's really not all that important to us. We've got a number of other alternatives to go. We've got Colstrip, we've got Skagit, we've got any number of different alternatives available to us, so don't get on your high horse and tell us that you want 30% of the cost to be in rail rates." That's the kind of posture you'd like to have, isn't it?

A I wish I had that luxury.

Q Isn't that the posture you'd like to have?

A I wish I had it.

Q Would you like to have it?

A I wish I did.

Q And you'd really like to have the Board of Natural Resources and Conservation in this proceeding help you with that alternative, wouldn't you?

A It's irrelevant.

Q What, the Board or the alternative?

A The alternative, because in either case, it's not an either/or situation; as I'm sure Mr. Bredemeier made very clear in his testimony, both resources are vitally needed.

Q Have you read his testimony?

A I know Mr. Bredemeier personally.

Q I know him, too. He's a nice fellow. Have you read his testimony?

A I don't think I did.

Q Generally, you characterize the negotiations on the rail rates as fraught with incertainty, didn't you?

A I don't know. Have you ever traded horses?

Q Are they uncertain, or aren't they?

A Yes.

Q Do you know Bob Pettibone?

A No, I don't.

Q Do you know the Gibson Hill firm?

A I've heard of them.

Q Did you know that they were going to do a study on the comparative alternative of shipping coal by unit train to a load center generating station?

A No, I didn't, and I read about it on the front page of the Billings Gazette the other day when I was riding the train through town, and I thought it was rather interesting.

Q Good press, good press. Now, let me ask you this question, Mr. Woodley. Knowing, as you do, the uncertainties that attend rail rate negotiations, have you asked Mr. Bellingham here, or somebody else on behalf of the Colstrip project management, to get in touch with anybody who might be doing such a study, to make sure that they took into consideration the uncertainties that attend rail rate negotiations?

A No, I have not.

Q But if we look at the statistics that you put together over a different period of time for whatever the purposes may have been on Exhibit No. 232, do I understand you correctly to say that the Boardman figure is a cost for the absorption of the energy into the PGE system?

A Cost for the absorption of the energy? It's the cost of the delivered energy.

Q Where?

A To the PGE system.

Q What does it take to deliver from Boardman to the PGE system?

A About 140 miles.

Q On transmission lines?

A That's correct.

Q Do you plug in transmission lines to your cost?

A There's a wheeling charge in there.

Q Whom do you pay that to?

A The Bonneville Power Administration.

Q If we were to look at Exhibit No. 232, reading from left to right, on any of the individual stations that you were comparing there, taking first the Colstrip coal-fired mine-mouth facility, we would read in April of 1972 a figure, like all of these figures, of course, that are based upon a unit of one for the nuclear Pebble Springs carding plant that doesn't tell us an absolute cost, we'd have a percentage related to the nuclear Pebble Springs, right?

A Yes, and by that relationship, also to each other.

Q But if we read across with Colstrip, we would find that it's 1.48 in April of 1972; then it goes down to 1.19 and comes up a little bit to 1.21. Now, that doesn't mean that the Colstrip costs have gone down since 1972, does it?

A No, that's not right.

Q It means that the nuclear costs have gone up faster than the Colstrip costs have moved up, and they have moved up?

A They haven't gone down, I assure you.

Q You know they've moved up, don't you?

A Oh, yes.

Q I think you told us in your testimony on redirect examination that the costs for Colstrip that you used were the official declared costs that came out of the Montana Power Company advices to the other Colstrip applicants?

A Correct.

Q Now, on the board, you sketched Exhibit 232-B, which has been taken off the board, but you may remember the slopes of the lines that you were illustrating for us. As I understood your testimony, the Boardman slope was the steepest, is that right?

A That's right. It has the highest incremental cost.

Q Is there a point at which the Boardman slope in its steep descent will overtake nuclear?

A Never.

Q Is there a point at which Boardman at its steep slope descent will overtake Colstrip?

A Never.

Q The lines were converging, obviously, as you were putting them together in the chart;that follows from slopes. Is there a point at which they converge absolutely as opposed to coming closer together?

A No, because the abscissa scale was hours of operation per year and at 8,760, you run out of hours, and that's where the lines end. There's no such convergence phenomena.

Q And one of the reasons, I assume, that you play with plant factors of 60% or 80% on nuclear plants is that the industry simply has very little experience in large-scale nuclear plants to determine what the plant factor will be?

A Well, no, not quite. The reason we do it is to have a comparable basis for an economic comparison and that's why I cover the complete range of plant factors, so that depending upon how the plant is dispatched, you have a cost that would be appropriate to that dispatch. It's a common error that's made amongst the hearings circuit today on nuclear to point to operating records of coal and operating records of nuclear and throw rocks at one another on the basis of those operating records, but the thing that's always neglected is the dispatch. That plant will be run when the dispatcher calls for it. A more correct comparison might be availability, but --

Q What do you expect will be the availability on your nuclear plant at Trogan?

A It will be quite high, I'm sure.

Q What's high? 80% 90%?

A In excess of 90%.

Q What do you expect to be the availability of your coal-fired plant at Boardman?

A Probably in the same vicinity.

Q What plant factor will you ascribe to the Boardman plant for purposes of your West Group Forecast?

A Well, the plant factor at Boardman is kind of a difficult thing to determine because it is such a high incremental cost unit. It is subject to displacement on a fairly frequent basis in the early projected years of its use by lower cost hydroelectric energy. Things are a great deal different in the Pacific Northwest than elsewhere in the world, because we have this very, very large and variable hydroelectric resource, and it's just, frankly, a function of whether you have a good water year or a bad water year. If you have a bad water year, the capacity factor will be quite high; if you have an outstandingly good water, the plant will be turned down and the capacity factor will probably be quite low. It's all a function of the operation of the system. You don't look at an individual plant, you look at the overall system.

Q Are you familiar with the Western Group Forecast?

A Not intimately. I don't participate in the construction of that forecast.

Q The answer that you just gave me to the question that I put to you, Mr. Woodley, is sometimes characterized as an "it depends" answer. Now, West Group Forecast doesn't have an "it depends" page. It has numbers that it uses and in order to do so, for Portland General Electric Company and every other participant in the West Group Forecast, they have to find a number for a plant factor which they will apply in order to have a resource. Do you know what the plant factor will be ascribed to the resource of the Boardman coal-fired plant of Portland General Electric Company?

A It's been agreed upon by all the member companies to utilize for new thermal resources, a .75 capacity factor, once an immature period is passed, and during the immature period, the factor is somewhat lower to account for unexpected outages of the plant due to the early equipment failures or whatever difficulties you may get into.

Q We had kind of a squabble here the other day when there was some testimony here by a fellow by the name of Bob Ender from the C. T. Main Company. Do you know him?

A No, I do not.

Q We were talking with Bob Ender on the question of whether the lower the load factor maintained by a company on a resource, the more it puts the screws to the customers. Do you have an opinion on that question?

A I think I just stated that. The load factor -- and I prefer to use the term, plant factor, on an individual plant may become low, because you have other lower costs resources that you want to utilize, and in that case, what you're doing is minimizing the cost of the power produced and in fact, quite the inverse is the case, in that you're not putting the screws on the customer, as you state, but you're actually minimizing the cost, to result in the lowest possible rates.

Q That's by lowering the load factor under the circumstances you describe?

A Exactly, and what I described, is the real world.

Q It doesn't occur to you, I suppose, Mr. Woodley, that anyone might have a reasonable difference of opinion with you on that subject?

A Anybody's entitled to their opinion, but what I'm stating is that that's the way it is in the real world. You will dispatch your units according to the lowest incremental costs. That is why gas turbines are the last to operate and nuclear is the first to operate, after your hydro has been implemented. Hydro, for all intents and purposes, represents a zero incremental cost. Nuclear is the next lowest. Mine-mouth coal generation is the next lowest, and then, unit train delivered coal is the next and you move on up to oil, which would be the highest. That's the real world. Now, if you want to form a different opinion as to the impact of that, fine.

Q I hear you telling me what you perceive is the real world. My question to you is whether that's as real as 2 + 2 = 4, in the old-style math, or whether what you have said is not subject to reasonable differences of opinion?

A Could you be more specific about the difference of opinion?

Q No.

A Then I can't help you.

Q I was afraid of that. Now, Mr. Woodley, you've just told us in your testimony this afternoon in the two additional questions that were put to you about an Alaskan coal reserve and PGE's interest there. Do you see some mine-mouth generating facilities built by PGE in the Alaska coal reserve area?

A That would be a long extension cord.

Q You're not going to do it, are you?

A The only way that I could see something like that coming about is if it were determined that you could process that coal on site to improve the Btu per pound or per unit volume to reduce the transportation cost, and what I'm talking about would be some beneficiation process, in which you might want to build a plant at the mine to produce energy to drive this fuels processing plant and you would then result in a higher valued product which would cost you less to ship, which you could then bring down to Oregon and burn it or utilize it in a generating plant to produce electricity.

Q That's not mine-mouth, then, is it?

A Well, sure, it's mine-mouth. You're doing the generating at the mine, but you'd be utilizing the energy right there, also, to improve the product.

Q But that wouldn't be the central generating station for turning on the light switches in your home and mine in Portland?

A It would be one of the elements on the supply line for the ultimate end consumption.

Q But you'd sure need a generating station some place else after the product gets to that load center?

A You would need some way to convert the fuel product into electric energy, yes.

Q Can you tell me again -- I think you mentioned it briefly in passing -- what is the extent of the Alaskan coal reserve projected?

A It's difficult, on the basis of the data that we have to date, to be very exact on that. I would just leave it in the range of several hundreds of millions of tons.

Q What is the extent of the coal reserve in Montana now?

A I don't know.

Q Do you know what it is any place?

A I don't think anybody really does.

Q Have you seen any published figures?

A Yes, lots of published figures.

Q Good. What published figures have you seen for Montana or Wyoming?

A Oh, the Bureau of Mines, the USGS, State of Montana, various statements by coal producers.

Q What are the figures?

A Hundreds of millions of tons.

Q You don't want us to infer from your testimony with respect to the Alaskan reserves, do you, Mr. Woodley, that they would be sufficient, by anybody's current projections, to fuel all of the coal-fired generating stations which are currently in the planning process in the Pacific Northwest?

A All the ones that are presently in the planning process in the Pacific Northwest could very easily be accommodated by the Alaskan projected reserve.

Q Really? We'd better define terms, then. What is the total amount of megawattage in coal-fired generating stations that you believe are in the planning process in the Pacific Northwest?

A To my knowledge, there is only -- of course, what do we call planning?

A I thought we might have differences as to terms as to what's in planning, but tell me what the figure is that you're thinking of.

A All right. We have one 530-megawatt plant that is now under construction. We are not planning any additional, under my definition of planning. There's been some publicity on Pacific Power and Light's plans at their West Roosevelt site --

Q What's the megawattage there?

A Well, if we talk about specific units committed to specific places on the load resource chart, zero.

Q That sounds like Mr. O'Connor's definition of planning. Let's define terms, then. What do you understand to be the total number of megawatts in generating stations fueled by coal for which applications have been made, at the most tentative level, by any of the utilities in the Pacific Northwest?

A Applications made to regulatory agencies?

Q Yes, sir.

A Then I'm only aware of the tentative application that was made to TPSET by PP&L on West Roosevelt.

Q What was the amount of megawattage there?

A I believe 3,000.

Q Okay, you have 3,000 there. You know that there are 1400 at Colstrip, right?

A True.

Q Now, you have --

A I don't think we would want to consider bringing Alaskan coal to Colstrip. That would be like bringing snow to the Eskimos.

Q Well, let's take a little look at that. We just might want to consider bringing that wonderful Alaska coal down to Colstrip.

A I doubt it.

Q Let's find out. You have 530 megawatts under construction at Boardman, right?

A That's correct.

Q There's 700 megawatts at Colstrip, either completed, or going to be completed within the next year?

A Yes.

Q There are 1400 megawatts at Centralia, right?

A Well, that's already operating.

Q That's a survey of those generating stations for which applications have been made, construction is underway, or are operating, fired by coal, to produce power here in the Pacific

Northwest. Additionally, are you aware of the fact that the Pacific Power and Light Company's announcement, which yesterday I thought was going to be today, of 1500 megawatts in the Sheridan, Wyoming area?

A Where was that announcement made? You referred to that this morning.

Q The Sheridan Press.

A I don't subscribe to that paper. Maybe I should, because that's one source of information I've missed.

Q The Sheridan Press, Sheridan, Wyoming -- interestingly, it describes the Pacific Power and Light Company as having described its interest in 1500 megawatts of generating stations, but they're not committed as to where those generating stations will be. They could be a 500-megawatt plant in Washington, a 500-megawatt plant in Oregon, and a 500-megawatt plant in Wyoming, or any combination of those three states, with three units, but one thing that they said that was definitive was that Decker Coal would go to the station wherever it was built. They also said that if the Decker coal were to go to an Oregon or Washington plant, they hadn't decided whether it would go by slurry pipeline or by rail, so that would be 1500 megawatts if we look at that. Are you aware of the announcement made by the Pacific Power and Light Company as to additional megawattage beyond the 3,000 for which they have made tentative application to the Washington Siting Council?

A No.

Q Mr. Lisbakken was here and he showed us the studies that they had made. They were talking about an additional 7,000 megawatts for the Roosevelt, Washington area.

A They have not made any application on 7,000 megawatts, I can assure you.

Q We're clear that the application filed so far is only 3,000 for that.

A You changed the definition of planning.

Q That's why I was trying to find out what planning was in your mind. Now, we have 8500 megawatts from Pacific Power and Light Company between Roosevelt, Washington, an excess over 3,000, and the announcement made in the Sheridan Press.

A Those are not all cumulative. You certainly don't intend to add all those numbers together, do you?

Q For the purpose of the question I'm going to ask you, yes.

A Okay, I'll remember that when I give you the answer.

Q 4400 megawatts in applications that are pending now, right? 530 megawatts under construction, and if you'll allow me the 700 megawatts for Colstrip units 1 and 2 -- although it may be 660 megawatts instead of 700 megawatts, and allow me for 1 and 2 both, that's 2100 megawatts when taken with Centralia's current operation, right? Now, if we add 8500, 4400, 2100, and 530 -- you've got a calculator -- I get 15,530 megawatts. Now, my question to you is, whether the Alaskan coal reserves are sufficient to fuel 15,530 megawatts for 37 years?

A My answer to you is, I do not know, nor does anyone else.

Q I suppose that's not an opinion on which you think reasonable minds could differ, either?

A Whether anybody else knows?

Q Yes.

A That is my considered opinion.

Q You were telling Mr. Bellingham about the contact -- I think I understood that you personally had with somebody from Western Energy Company back in the days when you were trying to get different quotations on the cost of coal that you would like to buy for the Boardman plant? I was right -- you were the personal man on the negotiation contact, were you not?

A I was one of two, yes.

Q The fellow you contacted from Western Energy was Paul Schmeckel and he came back to say, sorry, they had none to sell?

A That's correct.

Q Anybody tell you what Mr. Schmeckel had to say on that subject when he came here to testify last week -- week before last?

A Yes.

Q I know you haven't read his testimony, because it hasn't been transcribed yet, but did you know that George O'Connor had testified in this proceeding on that same subject?

A I knew George O'Connor had testified, but I wasn't sure on what subject, no.

Q What's your comment for us, Mr. Woodley, on Mr. O'Connor's view that the Western Energy Company did not submit a bid to the Portland General Electric Company because its coal wasn't competitive? Mind you, not that it was not available, but that it wasn't competitive?

A Well, I guess I'd have to disagree with that, according to what Mr. Schmeckel told us at that time.

Q You don't think maybe it was a kind of polite euphemism that Mr. Schmeckel used with respect to availability?

A When he said it wasn't available, that he had committed reserves to the extent that our needs for the years and in the tonnages that we specified, could not be met, I assumed that meant that he didn't have any to sell, not that it wasn't competitive.

Q Do you know how much he's sold since the time he told you he didn't have any?

A I have no idea, but I'm sure he's sold a lot, because otherwise, he would have told us that he would have had some to sell to us.

Q Do you know how many new contracts he's entered into since the time he told you he didn't have any to sell to you?

A I have no idea.

Q Would you turn to Exhibit No. 20, Mr. Woodley? I see you have them altogether there in a pack.

A You're very perceptive.

Q Exhibit No. 20 is a DNR Exhibit taken from your GRIT file for the Boardman fossil plant, a break-even delivered coal cost in 1974 dollars?

A That must be why I couldn't find it in my file. I had to chase one down, but anyway, I have it, and your question is what?

Q My question is, if you'll look at the end column, "Total Delivered Costs, Cents per million Btu," whether you use Amax coal from Burlington Northern and Union Pacific delivery, or you use Arch Mineral at Red Rim, Wyoming, on a UP one-line, you come up with the same total cost in cents per million Btu?

A No. The title at the top, if I may direct your attention to the title, it says, "Break-even delivered coal costs."

Q That means you have to have the same cost in total delivered costs in cents per million Btu?

A Do you see the figure that is underlined with two lines? It says $9.12 a ton. That is the answer to the calculation. The 94 cents is not the answer. We back calculate to get the $9.12, as I testified earlier this morning, to determine what, at that point, would be the maximum price that we would be willing to pay for this coal, represented to us by Arch Mineral Company.

Q Well, Mr. Woodley, I know you like your questions better than my questions, but try mine occasionally. My question to you is, why are you trying to come out with the equivalent delivered costs in cents per million Btu? Why do you care?

A Because it's a break-even cost.

Q Why do you use the terms, cents per million Btu? What's the relevance of that to your company?

A That's a means of comparing coals that have different heat contents that consequently weigh different amounts per ton and you have to combine rail weights with coal weights with heat contents to come up with the cost on a comparable basis, and that happens to be one very convenient common denominator to reduce these different costs to, cost per ton, cost per million Btu.

Q Isn't another way of putting that, Mr. Woodley, that what you're really interested in at your coal-fired generating station is the amount of Btu that you can produce, and therefore, if it takes more bulk coal to feed into your generating station, to produce the same amount of Btu, that is a fact of cost in the coal that you have produced and had to have delivered?

A Correct.

Q And in fact, that is so substantially at variance, given the various heat factors that could be involved, that when you compared these two particular supplies, Amax and Arch Mineral, the cost per ton could vary by almost a 100% in the actual coal cost, isn't that right?

A It could, yes. Of course, the higher heat content coal is usually more costly to mine, because it's usually under more adverse seam conditions. I think you can see that if you refer to Exhibit 19, and you see that on the basis of a mine cost calculation model, which takes into account all of these different variables, you will see that the southern Wyoming coals on a mine cost model are three times as expensive as the coals in the Powder River Basin, which are relatively easy to mine.

Q We were talking a little bit ago, Mr. Woodley, about the Alaskan coal that you say has a one-tenth of 1% sulfur content. Do you know of any coal reserves any place in the world that has sulfur content that low? I assume it's an average figure.

A I'm not knowledgeable on all the coal reserves in the world.

Q Of those that you are knowledgeable about, do you know any that low?

A No, I do not.

Q If, in fact, the Alaskan coal reserves were sufficient to fuel coal-fired generating stations in -- oh, let's say Montana --

A The value of our stock would go up.

Q Yes, it probably would.

A You said you weren't a stockholder this morning.

Q I'm still not.

A Maybe this information will change your mind.

Q I strongly doubt it. Wouldn't the determinant of whether the Alaskan coal should go to Newcastle, which was the analogy you suggested by the ice and the Eskimos, be the freight cost, the delivery cost?

A No one ever thought we would ever see the day when Montana coal would be shipped to Illinois. The difference was not cost.

Q Why do we ship coal from Montana to Illinois?

A I'll venture a guess.

Q If that's the best you've got, we'll have to take that.

A Let's say the National Environmental Protection Act.

Q You mean the lower sulfur of the Montana coal is attractive in Illinois?

A The lower sulfur of Montana coal is required by law in Illinois.

Q Well, that's not quite correct, of course, is it, Mr. Woodley?

A No, of course it isn't.

Q What is required in Illinois by state law, as well as by federal law, has to do with emissions, and if the people who use the coal think that it's a better idea for them to start with lower sulfur coal than to get it all out before it leaves the stack, then they're going to act on the basis of that rational decision, aren't they?

A I would hope so.

Q What's the sulfur content of the Decker coal mined in Montana?

A About 1%, .8 of 1%, or something in that neighborhood.

Q Are you sure about that?

A Well, it's sufficiently high that New Source Performance Standards cannot be met without SO_2 removal. That's the key, that's the threshold.

Q What would you say to .5 of 1%?

A I would say if it were .5 of 1%, and if the heat content were 8600 Btu's per pound, that the plant could meet the New Source Performance Standards without SO_2 removal.

Q Do you know what the Btu content is of the coal from the Decker mine?

A Exhibit 19 says that it's 8600. Decker? Did you say Decker?

Q Yes, sir.

A Or Colstrip?

Q Decker.

A Oh, I'm sorry. Decker is 9200. Maybe I misunderstood you. I thought you were asking me if I knew what the Colstrip sulfur content was. I'm sure that you asked me what the Colstrip sulfur content was. No?

Q No, I was asking you about Decker.

A Then I misspoke.

Q Okay, now let's go back. Decker -- what's the sulfur content of that coal?

A I don't know right offhand. I don't have that number with me.

Q What's the Btu content of the Decker coal?

A Exhibit 19 shows it to be 9200.

Q What's the highest Btu content of the coal in Montana?

A Well, referring again to Exhibit 19, 9200.

Q What's the lowest cost coal to mine in Montana?

A According to my mine cost model results in Exhibit 19, it would be Colstrip.

Q Indeed? Do you think that that's currently the case at the Colstrip site as compared to the Decker site?

A I've not made a study of that.

Q Now, you had some discussion, Mr. Woodley, with Mr. Bellingham this morning before we interrupted your testimony to have public witnesses to testify here, on the wisdom of shipping Montana coal to a generating station, say, in Oregon or Washington, and then shipping power back to Montana. That seems kind of silly to you, as I understand it, right?

A It doesn't seem very energy-efficient, and you were concerned about efficiency this morning.

Q Well, I'm always happy to see you adopt my concerns.

A When they're relevant, I will.

Q Will? You haven't yet?

A When your concerns are relevant, I certainly will adopt them, and in that case, I would agree that the efficiency of shipping coal to Oregon to generate electricity to be consumed in Montana is not energy-efficient, and efficiency is important and would be reflected in the cost, also.

Q Would you concede, Mr. Woodley, that Montana has some -- what they call mineral resources here?

A I'm not a minerals resource expert, but I know there's a lot of mining that takes place in Montana and they have a fine school that teaches people how to do that.

Q What do they do with that stuff that comes out of the mines?

A The coal?

Q Any kind of stuff. Any kind of stuff that comes out of the mines. What do they do with those natural resources?

A They do the same thing that we do with all the timber that comes off the mountains in Oregon.

Q Put it in some other kind of form, right?

A Process it and put it to a market.

Q For example, take copper -- that comes out of the ground some place, and it's refined some place and when it gets into another form, then it goes some place. After it goes some place in some other form, does it ever get back to Montana?

MR. BELLINGHAM: At this time, sir, we interpose an objection. Perhaps it should have been done some time ago. We see no relevancy to this line of questioning and accordingly object on the grounds of irrelevancy, immateriality, and exceeding the scope of the direct.

HEARINGS EXAMINER: Overruled.

Q Now you can answer.

A I'm not an expert on copper mining or mineral mining, nor am I an expert on the flow of those commodities through the economy, but I would venture to guess, with all the copper things that I have observed in the shops in Butte, that there's a lot of copper that finds its way into finished products here in Montana. That's purely a casual lay observation.

Q There's a nation state in this world, across the Pacific Ocean from your home state and mine called Japan and they do a lot of producing of materials there which come back across that same ocean to the United States, and the curious thing about the production of the materials that come from Japan is that the raw materials that went into the production came from the United States in the first place.

A You know, I knew I shouldn't have agreed with you that energy efficiency was relevant to this, because you're precisely correct. It makes no sense to take logs off the hills in Oregon and send them to Japan to make them into plywood and ship it back and sell it in Oregon from an energy efficiency standpoint, yet it's done.

Q That doesn't make any sense at all, does it?

A No, none, so efficiency really isn't relevant. I'm sorry I agreed with you.

Q Your apology is accepted if you're agreeing with anything that I've suggested, Mr. Woodley, but let me ask you, why do we permit this irrational world to revolve around us, in what you just described correctly, actually takes place?

A That is a leading question.

HEARINGS EXAMINER: I would sustain your objection to that as being a little bit beyond the scope. Trade relations between us and Japan -- it should be restricted a little bit more.

MR. SHENKER: I'll try and do that, Mr. Davis.

Q Why is it in the utility industry, it would not make sense to have a raw material go from one geographic base to another and have the finished product returned to the original base, and in other sectors of the economy, it is quite common, accepted and encouraged?

A Well, I can answer that by saying in the one example you give of Japan --

Q No, no, we can't talk about Japan. Mr. Davis said we had to get a little closer to home.

MR. BELLINGHAM: Go ahead and finish your answer.

A In those other cases, there are compelling reasons why that should occur, whether it be a more favorable labor market, whether it be the availability of essential materials for the processing, and in those cases, the economic perimeters are favorable. The case that you've described that I responded to, why one would do the energy conversion process from chemical to electrical energy at a location remote, for no other reason but to then make it remote, the rationale for that does escape me. I'm sorry.

Q I take it that your function at PGE is not to be the overall utility man expert in all subjects, and transmission lines, I take it, is not one of your areas of expertise, would that be right?

A As I testified earlier, when you asked me how many papers I had written, I said there had been papers written on transmission system planning and distribution system planning, and most recently, I've been involved in generation planning, and to the extent that transmission planning is discussed, perhaps I can claim to be knowledgeable. When it comes down to the transmission design, I would have to say that I'm probably not.

Q Don't be modest, just tell us where you think you can or can't tell us.

A You go ahead and ask, and I'll tell you whether I can answer, or not.

Q We've had some folks here testifying -- Bernie Goldhammer was one, and quite a few of the Applicants' own witnesses -- about how it really doesn't happen that if you have a generating station at Colstrip, Montana and 70% of that is supposed to go to the Pacific Northwest, that you will actually see 70% of the little voltage currents running from Colstrip, Montana, out to the Pacific Northwest, because they have an intertie system of some kind where the stuff doesn't all go out to the Pacific Northwest, it stays closer to home, because -- I don't know, some great guy in the sky has a giant computer and he determines where all the things are going to get allocated. Now, that's a little bit of flip way of referring to the transmission interconnections, but basically, it's true, isn't it?

A Of course.

Q As a matter of fact, Mr. Woodley, it doesn't take any great sophistication, does it, to conceive that you'd never have any flow of power going back to Montana from a generating station in Oregon or Washington, at all. You would simply not send power already committed to go out of Montana; you'd keep it here. Isn't that what would happen?

(PAUSE)

We are outside your expertise?

A I think you're outside of yours. The actual flow of energy is determined and governed, indeed, not by a giant computer in the sky; it's governed by some very real physical laws, most elemental, which is Ohm's Law, and certainly, the condition that you describe could be a very real operating condition; on the other hand, because of the nature of operation of you will merely be sworn, and you can expand on it, or if your written statement contains, basically, what you want to say, then you'll be cross-examined by the opponents. There's one of you that doesn't have a written statement. Do you want to start out? All right, sir.

JERRY H. GRAHAM, appearing as a public witness, having been first duly sworn upon his oath, was examined and testified as follows:

EXAMINATION OF JERRY H. GRAHAM

STATEMENT:

I am Jerry Graham, 615 Poplar Street, Colstrip, Montana. I moved to Colstrip May 1, 1975. I managed the Colstrip drugstore and hardware store. I opened up the 15th of May and was there 15 days getting ready. I have a family of three children, who reside in Spokane, Washington, due to their age, and they're all graduated, so I do not have a family with me other than my wife. We're happy people in Colstrip. We're pleased with the people that I do business with, Western Energy and Montana Power. We have a big -- we call it shopping center and we call it big. We sell drugs, hardware, appliances, a little bit of milk and bread; just about everything that you can think of that could be put into that store, we have. We live in a brand new home, built by Montana Power, Western Energy, whoever,a choice that I got to make of my own. We're real happy with our home and in fact, so happy, that we have remodeled it completely, not owning it, knowing that when we get ready to buy it, and we can buy it, it will be ready to live in the way we want it to be.

I've met a lot of people in Colstrip, Montana. They might be miners, they might be generator builders, they might be kids in high school, whatever. I know just about everybody in that town because they all come to my store. I have the only store there that sells about everything. I'm quite pleased with the reception we get in Colstrip from the public. I opened the store with the idea of doing maybe a thousand dollars a day, knowing that's what it would take to really make it. We do that, plus, only because we're backed by the people in the city of Colstrip.

I have to make one statement, that no other city in the United States could make, and I want to make it right now. We've been open now ten months. We're doing a pro-rated $400,000 a year in that store. I've got two checks in Colstrip. One of them is a $5.00 check from a woman in Bozeman, that I can't collect. I have one more check for $46.65 that the fellow got transferred. He hasn't landed yet and I can't find him. That's two checks in $400,000 worth of business that I can't collect. No other city in this whole United States can make that statement. I do not have bad checks. They talk about the environment of Colstrip. We have the finest people in the world living in Colstrip, Montana. Come about October -- I've been a good Lion in the Lion's Club of Montana for 14 years. I moved to Spokane and lived there six years and I was a Lion there, so we decided there was room for a Lion's Club in Colstrip. It takes 20 people to charter, so about the 15th of November, we came up with the idea that we were going to really charter a club. Okay, a week from this coming Saturday, we will have 52 members in our Lion's Club, we'll have a charter dinner. That's very, very seldom that happens. These people are wanting to get active. We have 52 men from all phases of business at Colstrip. Everyone of them is wanting to do their share and their part. I'll give you a few examples. Before we even chartered in December, we decided to have a Christmas party, and we had then maybe 20 members. We had a raffle so we could come up with money enough to support this Christmas party, and we took in $500 in three days, all from the people of Colstrip, willing to do their share to help us.

We have a fine community center there. There's a good recreation building worked on every day by members of our Lion's Club, the Kiwanis' Club, JayCees, whatever. Everybody is willing to do their share to make Colstrip a better place to live.

We had a little bit of mud there when I first got there, which is gone now. There's a little mud down below us, but the town itself is really expanding. I'm real pleased with it. It's my home and I'm one of many that's very proud to say that I live in Colstrip, Montana; in fact, I do it every day when they bring the busloads of people in. They come into our store first because we have a so-called potty stop, and the people all go through our store. I sell my town because I'm proud of it. I sell it because, not only am I a resident of Colstrip, but I believe in what Colstrip has to offer the state of Montana, Washington, Oregon, wherever you people want to talk about. We have something to offer, and that's good, friendly people, and a good living. We make good money down there, I must admit that, only because we have a captive audience. They have to go 30 miles to buy a package of cigarettes, so they come to me. I know that the people buy a lot of things from me and maybe pay a little more money because I'm in Colstrip and they appreciate it.

That's my statement. I want it on the record that I'm a proud Colstrip person. I'm a proud person anyway, but I am really proud of Colstrip, Montana, and that I have a part of it. Thank you.

HEARINGS EXAMINER: Thank you, sir. Do you want to cross-examine?

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q Mr. Graham, I want you to know that other folks are delighted that you feel that kind of pride, and I suppose the only question I want to ask you, sir, is whether you cashed my check yet?

A I have never failed to cash a check in Colstrip, never. I have never turned anybody down.

Q I was in your store when the Department of Natural Resources came down for the visit, and I just wanted to make sure that I wasn't among those that didn't manage to get honored when you tried to get payment on the check.

A No.

MR. SHENKER: Okay, thank you very much.

HEARINGS EXAMINER: Mr. Meloy?

MR. MELOY: No questions.

HEARINGS EXAMINER: I want to ask a question. Are you a pharmicist?

WITNESS: No, I'm not.

HEARINGS EXAMINER: Do you have a pharmicist?

WITNESS: Yes, we do. I'll explain that just a little ways. I'm a member of the Triple C Drug and Hardware in Billings. They have two pharmacists in their store there and they transfer one pharmacist down every other week, so we have a pharmacist during the week, but not on the weekends.

HEARINGS EXAMINER: Thank you very much, sir. Your statement will go in the record.

(WITNESS EXCUSED.)

GEORGE W. SYBRANT, appearing as a public witness, having been first duly sworn upon his oath, both as to his written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF GEORGE W. SYBRANT WAS DIRECTED TO BE INSERTED AT THIS POINT.)

My name is George W. Sybrant and I am Project Manager for Burtco Company Inc. a subcontractor of Bechtel Corporation. My family and I have lived in Colstrip since March of 1973. I am a board member of the Colstrip Recreation Board which I was publicly elected to from my living area. I have always been interested in community recreation for all age groups and have served on other similar boards in communities that I have lived.

The history of Colstrip's recreational activities is actually quite typical of any growing community. In the early mining days the community activities were centered around the school and of course the community hall. The community hall built in 1924 was converted to an apartment house in 1945. In 1946 the Northern Pacific Railroad completed the new school which included a theater, club room, soda fountain, and gym. These areas were all available for the community to use. This community during the Foley Bros. mining days reached a peak population of about 500 people during the mid 1940's. Movies were shown by the school a couple times a month, there were occassional square dances and card parties, meetings of various types, and there was always a town basketball team.

During the period after Foley Bros. terminated mining and before Western Energy started mining, the town dropped to a low of about 35 families and most of the activities centered around 4-H and the school. As mining resumed the populatinn grew and converted into the arts and crafts building became places for the square dancers to meet, the teen club and the Federated Women's Club to form, and the social club to grow to burst its seams to become a number of new clubs and organization. The Jaycees organized and took over the

Monday night Bingo games as well as the many activities sponsored by Jaycees throughout the country. The Kiwanis took on the huge project of helping to build a swimming pool and also built a new trap range that went into use last summer. The newly organized Lions Club started their activities by hosting a Children's Christmas party for about 400 children and their parents and of course are making many plans for the future. The Federated Women's Club is establishing a community library in the newly remodeled arts and crafts building. A full time director was hired through federal, state, and local funds to operate the teen center and has helped to organize a youth ski club, outdoor club, movies for the youth, and drug and alcohol counceling. Small craft and card clubs have formed throughout town as well as a needle club, art classes, and a ski club. Weight Watchers and Toastmasters meet once a week and Alcoholics Anonymous meets three times a week. Square dance classes are held weekly and the experienced dancers meet twice a month. College credit classes are being offered in Colstrip through the cooperation of the Colstrip school and Miles Community College.

Four Little League baseball teams, a Babe Ruth team, the Recreation Department's summer youth program, and of course swimming at the old swimming hole are summer time activities from many of the younger Colstrip residents. School activities, ice skating, sleding, and teen center activities occupy the school months.

Close to 200 men and women played in the Colstrip Basketball League last winter along with 30 to 40 volleyball players. During the summer over 200 men and women played in the Colstrip Softball League. A little athletic variety is added with tennis, bike races, the men's pentathlon, exercise classes, and the Colstrip Spoilathon which will be published nationally in the 1976 Runners' World Magazine event schedule.

The surge pond has already provided many leisurely hours of sailing, canoeing, and swimming and was the site of a Boy Scout Camporee last summer. Soon the man made lake will be stocked with game fish and one of man's oldest sports will be abailable.

With the coming of our new park and open space system financed by $526,000 from the Bureau of Outdoor Recreation and $526,000 from Western Energy Company and the completion of our Community Center, plans are already in the making for many new activities. Swimming for recreation and competition; handball and racketball; community dances; plays; musical groups; talent contests; picnics; more gym activities; and many more community functions are all in the plans of the recreation department, the Colstrip Recreation Board, and the many clubs and organizations made up of the people for whom Colstrip is home.

None of these activities or ambitions can be topped by anything but those who need no explanation but their names: Boy Scouts, Cub Scouts, Girl Scouts, Brownies, Rainbow Girls, St. Margaret Mary Catholic Church, Colstrip Community Church, Luthern Church, Alliance Church, Southern Baptist Church, Church of Christ, Bahi'i Faith, and the Church of Jesus Christ of Latter Day Saints.

To many people Colstrip is not just a place to work — it is a place to raise a family, a place to go to church, a place to plan a future, a place to enjoy leisure hours, a place to live a lifetime. Colstrip is on the map in more ways than one and it is there to stay.

EXAMINATION OF GEORGE W. SYBRANT

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q Mr. Sybrant, it's both kind and courageous of you to go first so we can end the week with a couple of lovely ladies, who will be the first, I believe, who have graced our presence at the Colstrip proceedings as witnesses. Mr. Sybrant, you say in your prepared statement, sir, that you're the project manager for Burtco Company as subcontractor of the Bechtel Corporation?

A Yes, sir.

Q Where are their home offices?

A Seattle, Washington.

Q Have you resided in the Colstrip area long?

A Three years, going on three years.

Q Before that, did you reside in the Seattle area?

A Yes.

Q What does your company do for Bechtel?

A We're logistic contractors. I think if you were up there, you probably ate in our mess hall; we do the bachelor quarters and the trailer park and the grocery store and the gas station, the beauty shop, security.

Q They say that you serve prodigious amounts of food in that mess hall, that it's quite a large operating force. You have your family in Colstrip, do you not, Mr. Sybrant?

A Yes, I do.

Q And I'm sure that you're speaking not only for yourself, but for your family, are you not, sir, when you note your pleasure in living in a good and happy community?

A Yes, we really have enjoyed Colstrip; in fact, we're selfish in the idea that we would like to stay there, but in my type of business, 3 and 4 isn't available, and I probably will move to some other place.

Q And wherever Burtco sends, that's where you'll go?

A Right, but I'd just as soon stay in Colstrip.

Q Well, if Colstrip 3 and 4 are built and done and finished and Burtco has no more business for Bechtel there, you'd have to face the problem then, but you don't have to face it quite yet, I suppose. The only question I think I want to put to you, Mr. Sybrant, based upon your statement, sir, and your expression of the pleasure that you have in living in the Colstrip area, I take it that it would be true, and I want you to confirm if it would be true that you wouldn't want to see anything happen to the town of Colstrip which would make it a difficult place to live from the standpoint of health or pleasure, would you?

A No.

MR. SHENKER: I have no further questions, and I thank you for being here, sir.

HEARINGS EXAMINER: Mr. Meloy?

MR. MELOY: No questions.

HEARINGS EXAMINER: Very well, you're excused, sir, and thank you.

(WITNESS EXCUSED.)

CAROLE BETZOLD, appearing as a public witness, having been first duly sworn upon her oath, both as to her written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF CAROLE BETZOLD WAS DIRECTED TO BE INSERTED AT THIS POINT.)

My name is Carole Betzold. I was born in Madison, Wisconsin but moved to Washington State when I was a year old. I am a housewife and mother and have lived in Colstrip for over 2 years.

My husband has worked for Puget Sound Power and Light for 10 years and in 1973 was offerred a job in the major projects division of Puget. To gain experience in this field, he would be sent to Colstrip, Montana for 2½ years to work on the coal generating plant then transfer back to Washington State. We flew to Montana to look over the job and town and decided to make the move. We departed for Colstrip in November 1973.

During the winter of 1974 I was asked to become involved in a Woman's Club that was starting and in September 1974 we had our first meeting. I was elected President in May 1975 and the club started its 2nd year. We have 29 members.

Our main project is trying to start a public library in Colstrip. Western Energy generously gave us a building and has finished its remodeling inside and out. We are now cataloging books and organizing its shelves.

Woman's Club has received financial aid for the library from the Colstrip Social Club and the Jayceens. Our out-of-town help consists of a much needed book drop from the Rosebud County Commissioners and 3,000 plus books donated by many generous people. Because Colstrip is a private town, we are unable to get any financial help from the Sagebrush Federation of Libraries, therefore fundraising is important to us. In the past two years, we have had 2 cake walks, two bazaars, a story hour for pre-schoolers, a raffle, one style show with another style show coming up this spring. We are now in the process of trying to win a monetary award through Woman's Clubs all over the state of Montana for our library project.

Other community groups in Colstrip are Jaycees, Jayceens, Toastmasters, boy scouts, girl scouts, Kaiwanis, Lions, volunteer firemen, a C.B. club and one housewife has just started a twice monthly needlework club.

So all in all, a person can find plenty to do in Colstrip if they're really interested in the community.

EXAMINATION OF CAROLE BETZOLD

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q How old are you, Mrs. Betzold?

A 31.

Q You've been in the Colstrip area now for a couple of years?

A Yes.

Q Your husband worked for Puget Sound Power and Light Company?

A He does now.

Q I haven't finished the question yet. Your husband worked for the Puget Sound Power and Light Company, I take it, in the Seattle area, before you came to Colstrip, is that right?

A Yes.

Q Did you like Seattle?

A Yes. Not as well as Colstrip, though.

Q Did you like Madison?

A I was a year old when I moved from there.

Q Where did you go to when you left Madison, Wisconsin?

A Bellingham, Washington.

Q Was that a nice town?

A Fairly nice, yes.

Q Now, in the Colstrip, Mrs. Betzold, your statements tells us that a person can find plenty to do in Colstrip if they're really interested in the community, and I'm pleased to hear that that's the case, and I think the question I want to put to you is exactly the same question that I put to Mr. Sybrant. You wouldn't want to see anything happen to your town that made it anything other than a good place to live in for yourself and your family from the standpoint of pleasure and health, isn't that right?

A That's right.

MR. SHENKER: I have no further questions of you, Mrs. Betzold, and I do appreciate your being here.

HEARINGS EXAMINER: Thank you. You are excused.

(WITNESS EXCUSED.)

MATTIE HAUGHAIN, appearing as a public witness, having been first duly sworn upon her oath, both as to her written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF MATTIE HAUGHAIN WAS DIRECTED TO BE INSERTED AT THIS POINT.)

Mattie ~~Haughian~~
Haughian

My family came to Colstrip in August of 1972 with a trailer house which had been converted into a cafe. At that time none of the new additions had been built. We were the first people to move into the Burtco Trailer Park. In November 1972 we had an opportunity to lease the Western Energy Bunkhouse which houses 34 men. In September of 1973 we rented the new motel which had been constructed by the Western Energy Company. We ran all three businesses until January 1975 at which time we rented the cafe out and continued to operate the motel and bunkhouse which we are presently doing.

We have four dsughters. One of which graduated from Colstrip High School in 1974 with a scholarship to Miles City Community. She went there for 2 quarters and then joined the WACs. She is in nurses training and made a statement to the Billings Gazette stating that possibly she could come back to Colstrip and work as a nurse.

We also have 2 daughters in Colstrip High School. One was a cheerleader for 2 years, one for 3 years and 1 was Pom Pom girl for one year. Mary has been class President for 2 years and is on the Student Body. Bobbi is on the Honor Roll. They participate in ~~Bank~~, Basketball and Track in school. Outside of school they both have part time jobs. They belong to the Local Teen Center, Ski Club, Outing Club. They also go ice skating, play tennis, softball, bike trips and also swimming.

Our youngest daughter is in 1st grade and had an opportunity to go to kindergarten.

My family has a very good social life in Colstrip. In fact, at times we wish there weren't so many activities as there aren't enough hours in the day to cover everything.

We have lived in Montana all of our lives on ranches As a matter of fact, my husband still has some livestock. We are much happier and have lived a much better life in Colstrip than we did before.

We can't see that Colstrip has hurt the country in anyway. The road from Forsyth is much better than it was a few years ago. The town of Colstrip is much attractive more than it was. We would really like to see Colstrip continue as we would like to make our permanent home here.

EXAMINATION OF MATTIE HAUGHAIN

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q Mrs. Haughain, did you and the three folks from Colstrip who just testified a moment ago, come up together?

A Yes.

Q Did you come up with Marty White?

A Yes.

Q Did Mr. White drive the car, or did you have some other car pooling arrangement?

A No, we flew.

Q On a commercial plane?

A No.

Q Private plane?

A Yes.

Q A Montana Power Company plane?

A I'm not aware whose plane it was.

Q You understood, though, that Mr. White was going to make the arrangements for you folks to come up together in a plane that he would provide?

A Yes, because I couldn't be away from my operations long enough to drive.

Q When did you understand, Mrs. Haughain, that you were going to come here to testify?

A A couple of weeks ago.

Q How did that come to pass, Ma'am?

A Well, just a bunch of us got together and talked about it. We decided maybe we could do some good.

Q The five of you who are here now?

A The four of us.

Q The four of you -- not Mr. White?

A No.

Q The four of you are friends, I assume, who know each other in the Colstrip area?

A Oh, yes.

Q Mrs. Haughain, in your statement in the last paragraph, the first sentence, you say: "We can't see that Colstrip has hurt the country in any way." By the country, you mean the Colstrip area, do you not?

A Right.

Q By Colstrip, you mean the operation of units that are there?

A Yes.

Q It's obvious, but I just wanted to make sure that the record is clear. That's a good thing, as far as you're concerned, that the operation of the units has not hurt the general Colstrip area, right?

A Well, yes.

Q You wouldn't want to see anything happen that would change that picture and in fact, hurt the area, would you?

A Well, there's not very much there to hurt.

Q Well, there's your family there, Ma'am; you wouldn't want them to be hurt, would you?

A Well, no, but I mean the country, speaking of the country there.

Q You wouldn't want your family to be exposed to health problems that are not necessary to be exposed to, would you?

A No.

Q And you'd want the community of Colstrip to be an attractive, pleasant community for yourself and for your family, wouldn't you?

A Yes, I would.

Q You wouldn't want to see anything happen that might change that situation, would you?

A No.

MR. SHENKER: I have no other questions for you, Mrs. Haughain, and I appreciate your being here to testify at this proceeding.

HEARINGS EXAMINER: Thank you very much, folks, and your testimony will be made part of the record in this case and go to the Board.

(Witness excused.)

HEARINGS EXAMINER: Is there anyone else present that wants to testify? (No response.) Do you know of any other witnesses coming this afternoon?

MR. ROSS: No.

HEARINGS EXAMINER: For the record, Mr. Bellingham, as far as your case in chief is concerned, do you have more witnesses? I understood earlier this week that I issued two subpoenas for witnesses, adverse witnesses, and arrangements were made between Mr. Peterson and Mr. Graybill and myself that they didn't have to come this week because of other commitments, and we don't know what the status of that is now, do we?

MR. BELLINGHAM: Well, you're in the same league I am, because I do not know the status. Mr. Peterson is gone today, but we have no more witnesses today.

MR. SHENKER: I have no knowledge of any adverse witnesses or any other kinds of witnesses that the Applicants are going to call.

HEARINGS EXAMINER: Well, I issued some subpoenas, and my knowledge of it was that Mr. Graybill called a couple of Northern Plains -- I don't know whether they're Northern Plains people or not, but Leo wanted to be present if and when they testified. I issued a subpoena in blank for today, and some other arrangements were made then between Mr. Peterson and Mr. Graybill and myself that they wouldn't have to be here today because he couldn't be here, so you'll know Monday, then, whether you've completed your case in chief? That's what I'm really trying to get at.

MR. BELLINGHAM: Yes, sir.

HEARINGS EXAMINER: In the event they're not called or are called, we just simply don't know.

MR. SHENKER: May I ask a question?

HEARINGS EXAMINER: Yes.

MR. SHENKER: Aside from these two subpoenas that I guess Mr. Peterson and Mr. Graybill have worked something out on, is there anything else that the Applicants are going to offer in their case in chief? I knew of nothing else.

HEARINGS EXAMINER: There's one other matter. I don't know whether they're going to offer it or whether they aren't going to offer it, but it's been bothering me, and I think some consideration should be given to it, and that is my understanding, if this concludes your case in chief, without offering the Westinghouse report. I'm concerned if it's a Board exhibit.

MR. SHENKER: It already is.

HEARINGS EXAMINER: It's not marked in these Board exhibits I have here.

MR. SHENKER: I thought it was marked as a Board exhibit by Mr. Sabol February 15, 1975, in Bozeman, but I could be wrong. He announced that he was doing so at that time, Carl, and if he didn't do it, then it's probably a clerical slipup.

HEARINGS EXAMINER: Well, it's not on my numbered list of exhibits.

MR. BELLINGHAM: I haven't seen it on any list, and I assume the same thing would also apply to the Department.

HEARINGS EXAMINER: They were actually, in fact, delivered to the Board at the commencement of this proceeding, so if that's agreeable with everybody, I'll make both of those a Board exhibit, because they do have them in their hands as part of the evidence.

MR. SHENKER: I thought they already were a Board exhibit.

HEARINGS EXAMINER: I think there's some testimony in the transcript to that effect, but it was never entered in or marked.

MR. SHENKER: There was some concern on our part that those documents properly could not be received in evidence in the different rules that applied to the Board of Health proceeding, but my understanding is that they would apply in the Board of Natural Resources proceeding, and I just assumed that they were already in from earlier comments made by Mr. Sabol.

HEARINGS EXAMINER: I don't find it, but I think to clarify that matter, we should have it in definitely, so I'll mark those next week and we'll put them in and look at our schedule then. Do you have anything else?

MR. BELLINGHAM: Yes, I do have just a couple of quick items. What about statements of the opposing witnesses coming in on their case? I understand that there are three missing. I don't know who they are. I was just informed. Do we have a reasonable expectation of having those early next week?

MR. SHENKER: Sure. I assume the three day rule applies. The only statements that I know of --

HEARINGS EXAMINER: What's the three day rule now?

MR. SHENKER: What is it now? It's always been that we have to have all the statements in more than three days before the witnesses --

HEARINGS EXAMINER: That's not the order I made when we recommenced this hearing.

MR. SHENKER: Is that rule out?

HEARINGS EXAMINER: That wasn't what the order contained, that I made.

MR. BELLINGHAM: I think the three day rule is still applicable as to rebuttal witnesses, but certainly not as to witnesses in chief.

MR. SHENKER: Okay. Then I suppose we're on paragraph 5 of the order that was entered before this particular hearing was resumed. Our witness statements are in the hands of the Applicants with the exception of Mr. Terraccino and Mr. Ayers, and I would hope that those would be available Monday or Tuesday of next week. We have served today the statements of Dr. Hammer and Dr. Gorden, and I should also say for the record that we took the extra step, even though Mr. Hilley isn't here, we called him on the phone to see if he wanted those witness statements, since they don't mention employment any place. He said yes, so we're sending them up by bus to Great Falls today.

HEARINGS EXAMINER: I've asked Mr. Mueller here, on behalf of the Northern Plains, although he's not counsel of record, he's in touch, and I understand your statements will be here the first of the week? I've also asked Mr. Meloy, and he'll have us an answer Monday. They're in touch between Chicago and Tucson, or some place, right? Are there any other questions before we adjourn on Friday the 13th?

MR. BELLINGHAM: Transcripts -- now, we have three, I understand. Are there more than that?

MR. MacINTYRE: Gwen has given us more to print, but yesterday the printers were on vacation. Their machines are now broken down and they're on vacation again Monday, so it doesn't appear we are going to get any until some time Tuesday.

HEARINGS EXAMINER: We have 13, 14 and 15 back there, don't we? There may be 17 -- 16 is down at the printer's and it's been there ten days and we haven't been able to get it out of there, but if there are either of these others you want before the weekend, they're back there. I think she has a couple more, doesn't she? She has 15?

MR. BELLINGHAM: Well, we're at a disadvantage because we don't have access to them.

MR. MacINTYRE: They've been served with every one that we have.

HEARINGS EXAMINER: We'll adjourn until 1:00 o'clock on the holiday Monday, so we'll all be here at 1:00 o'clock Monday, double time.

(HEARING RECESSED AT 3:30 P.M.)